

MAY 12 1925

AUTOMOTIVE INDUSTRIES

Vol. 52
Number 19

PUBLISHED WEEKLY AT 239 WEST 39th STREET
NEW YORK, MAY 7, 1925

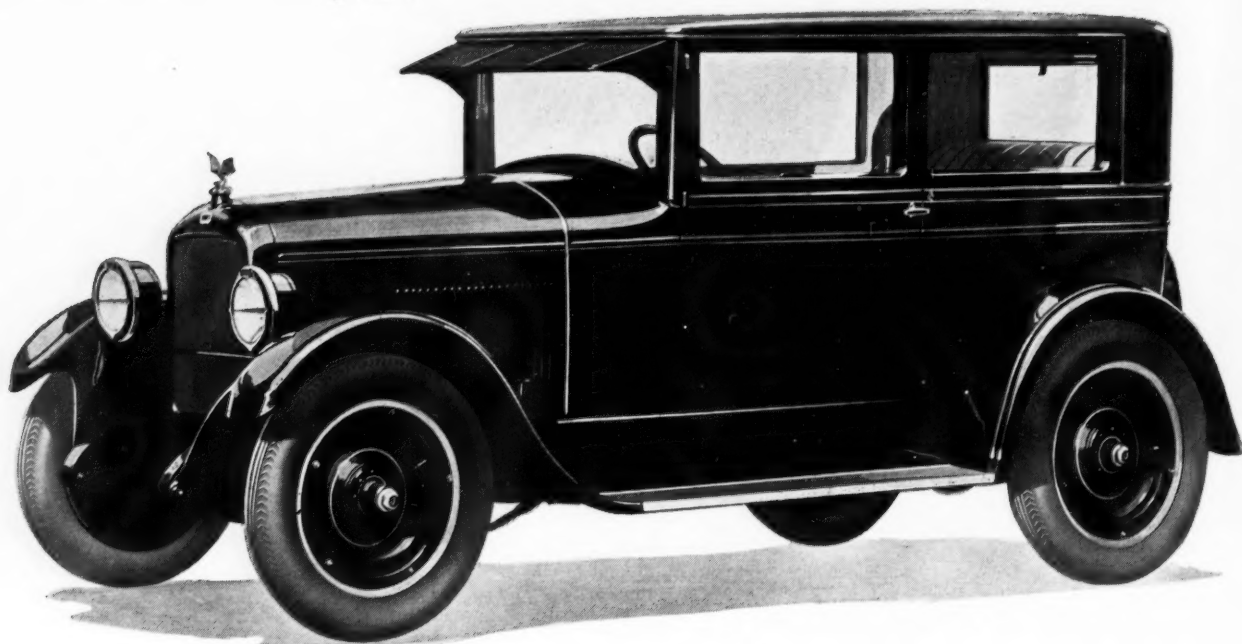
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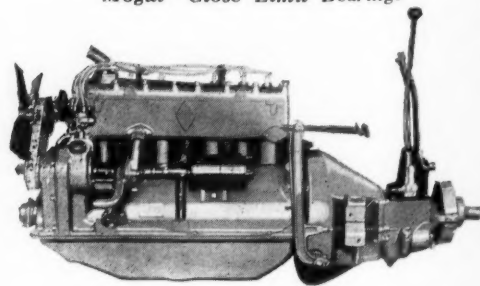
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AUTOMOTIVE INDUSTRIES

VOLUME 52

New York, Thursday, May 7, 1925

NUMBER 19

Developments of Next 60 Days May Decide 1925 Profits

By Norman G. Shidle

Overproduction and glutted markets.

Curtailed production and readjustment of dealer stocks.

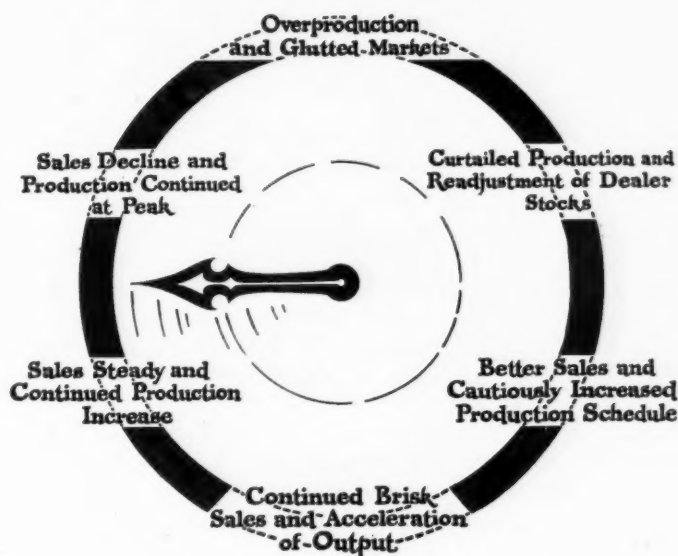
Better sales and cautiously increased production schedules.

Continued brisk sales and acceleration of output.

Sales steady and continued production increase.

Sales decline and production continued at peak.

Overproduction and glutted markets again.



Where will the arrow point July 1st?

HOW often has such a series of events taken place in the automotive industry? Will the automotive cycle always be the same?

These questions have a direct bearing on the immediate automotive situation. The industry today is on the line between the fifth and sixth stages of the cycle. Actions of vehicle manufacturers in the next 60 days will have an important bearing on 1925 profits.

Will the lessons of 1924 be forgotten or will they stand out clearly enough in the minds of a majority of producers to prevent the cycle going into the usual overproduction phase?

We aren't predicting any dire happenings for the industry. Conditions are too sound and prospects too good for anything like that. But at the risk of losing our card in Local No. 41144 of the Order of Unadulterated Pollyannas, we're going to express frankly a few thoughts that come as a result of looking over carefully the automotive situation today.

Three factors stand out above the rest:

1. Automobiles are being produced at an unprecedented rate. Sales are good but are not reaching record-breaking proportions.
2. The prosperity being enjoyed by the automo-

tive industry today is not common to other lines of business. Production declines have been recorded in almost every commodity except automobiles, and only fair business is expected in the next few months.

3. Time payments are essential to the building of any great manufacturing industry and constitute a sound and constructive part of any merchandising program—BUT time payments can be handled in such a way as to store up considerable trouble for the future. A market forced too far is likely to back up just at the wrong time.

It is related of Caesar that, in the days of his triumph, when the plaudits of Rome were being showered upon him, he had a retainer whose duty it was to follow him about and say at intervals, "Remember, thou art but a man!"

If the automobile industry had any such hired voice, that voice might well choose the present time to make itself heard.

Manufacturers in general have adopted a policy of suiting production to dealer orders. Most of them have stuck to that plan pretty closely for the last six

months—and the entire industry and trade has benefited as a result.

But a tendency to push output to levels higher than those demanded by orders has developed recently in some cases. The huge production totals recorded for April, indicate that nearly every plant in the industry is going full blast. Capacity production of this kind probably won't last more than a few weeks longer this year.

Danger in Too Much Optimism

Most manufacturers admit this, but the old danger still remains that each one will believe that his particular factory will be able to go on just a few weeks longer than anybody else's. When a whole lot of executives think that way the result is that the total production of automobiles continues at an extremely high level for several weeks longer than is justified from a sales standpoint. And an overproduction running over a period of four to six weeks may cause trouble for the manufacturers and retailers for four to six months following.

At the present moment everything is running sweetly both in the manufacturing and retail field. Retail sales since the beginning of March have been very good. An early spring gave sales a strong stimulus about two months ago, after a rather disappointing January and February in the retail field. Ever since then the public has been ordering cars at a rapid rate, and buyers are having to wait anywhere from one to six weeks for deliveries in some lines today.

To get the full profit benefit of this very excellent spring business, production must be tapered off gradually. Dealer stocks are low now. They must be kept low during the summer period of declining de-

A NEW production record has been set. April production totalled 420,000, according to preliminary N.A.C.C. estimates.

The largest previous month in the history of the industry was May, 1923, when about 404,000 vehicles were built.

The analysis of current conditions given in this article is particularly interesting in light of the remarkably high April output.

mand, as they were during the spring period of rising demand. The latter is harder to achieve than the former. It always was and it always will be.

Here's the trouble. Retail demand can decline almost overnight. Usually that decline can be sensed in advance, but often it does not appear in any current figures. But cutting down production with great rapidity is expensive. The manufacturing and distributing structure of the automotive industry is so large that it cannot move with the agility of a peanut-stand operator. Factory inventories of parts and materials have to be ordered and bought weeks or perhaps months in advance, thousands of cars always are on their way to dealers or in distributors' warehouses,

and thousands more always are in process of manufacture. This huge manufacturing machine, once put into high, can't be stopped suddenly without tremendous wear and tear on the business brake lining.

That means the industry must look ahead; decide what the next few months seem likely to bring and then act accordingly.

The automobile industry is almost alone in its present prosperity. The spring production peak has been passed in other fields, and decline both in production and sales has been recorded all along the line. The effect of these major business movements will affect automobile business sooner or later. Should further decline ensue three unfavorable things might happen to the automobile retail market:

1. Demand for both new and used cars may decline.
2. Cars bought on too liberal time-payment plans will have to be repossessed because those who buy on a shoestring are the first to be affected by industrial declines.
3. Orders on dealers' books for future deliveries may fade into thin air, because men who were prosperous when they placed the order no longer are in a buying mood.

The automobile industry, with the lessons of 1924 still fresh in mind, may have in the next few weeks a remarkable opportunity to prove its ability for orderly readjustment from peak production conditions to a normal output basis. Nobody expects anything in the nature of a slump, so that the readjustment to summer schedules can be made without severe hardship to any factor in the trade, provided only that plans for the readjustment are made sufficiently in advance.

In a year when the general business curve is distinctly upward, general economic conditions may easily offset the seasonal influences which tend to cause fewer sales in the summer than in the spring months. As a matter of fact the general economic situation always is a much stronger factor in determining automotive sales volume than are seasonal influences. Especially has this been the case since the beginning of closed car popularity.

But at the present time there is no strong upward trend in general business to offset the seasonal factor.

The influence of time-payment sales during a declining market also may have to be considered seriously in the next few months. That time-payment sales in general are thoroughly sound as a basis for automotive expansion can be questioned no longer. Without time-payment sales the number of vehicles sold necessarily would have been infinitely smaller than they were and consequently production and low selling prices would have been impossible. Most men earn their money in installments and consequently can best pay for their comforts and needs on the same basis. Despite the fact that financing of time-payments inevitably costs the buyer something, the extension of the market making possible low car prices more than offsets any such cost.

But time-payments are subject to abuse. Men in the industry will disagree as to what constitutes



2. Competition for business is very keen among finance companies and the consequent pressure to give easy terms as a means of getting more business is very strong.

So far as passenger cars are concerned the present situation doesn't seem to contain anything serious to worry about. The dangers mentioned are present, of course, and are close enough to the surface to break through at any time that pressure gets a little too great. Manufacturers should bear this fact in mind in considering manufacturing schedules. A dealer with more cars on hand than he can sell is far more likely to be tempted by unsound financing schemes to get rid of cars to men who can't pay for them than is the dealer with only normal stocks.

It is feared in some quarters that the new Ford \$12.40 plan, if extended throughout the country, will have an unfavorable effect on used car sales of other makes.

By and large, automotive executives seem to have reacted unfavorably to the Ford \$12.40 plan, feeling that it may serve to bring into the market a number of buyers who would be unable to keep up payments on the vehicles should the slightest industrial depression come along. A man who can pay down only \$12.40 on a car, they argue, probably is living along from week to week, dependent entirely on his immediate wages for existence. If he were out of work for a week he would be likely to fail in his payments. Such a man, their argument continues, hasn't any business owning an automobile anyhow. It is the feeling of these men that forcing the market to this extent will mean considerable difficulties for everybody in the long run.

There are others, though, who point out that nothing succeeds like success and that Ford has gone out and done so many things in the past that everybody said couldn't be done, that only a very bold man would go so far as to prophesy the failure of the present move.

Were it not for the keen competition which exists in the finance company field there would be little to bother about in the time payment situation.

abuse, but all will agree that abuses are present. The group of finance companies which banded together a few months ago, passed resolutions indicating a belief that abuse began when less than 33 1/3 per cent was accepted as a down payment on a new car or when the payments were extended for a period of more than 12 months. This association recently reaffirmed these principles, but admitted, at the same time, that many of its members were not living up to them. The Ford financing plans quite frequently do not accept as standard any such criterion as that mentioned.

There seems to be little question but that the number of cars sold on time payment will continue to increase. It is to be hoped that the market will not be forced too far. Almost any kind of terms can be extended without bringing dire results so long as the market for cars is on the rise. But when the market begins to fall chickens come home to roost. Investigation of the time payment situation today indicates two important points:

1. Important executives in stable finance companies, both of the recourse and non-recourse type are stronger than ever in their belief that time-payments should be extended only on a thoroughly sound and conservative basis; that both the industry and the finance companies have a great deal to lose and nothing to gain permanently from forcing the market with long terms and low down-payments as a bait.

The Problem of Satisfactory, All-Year-Round Engine Lubrication—Part 1

How temperature variations and dilution interfere with proper lubrication. Enormous pressures are needed to flow oil of high viscosity. Cold engines suffer. Dilution helps to save the day.

By A. Ludlow Clayden

THE past few years have shown up several lubrication problems that are more or less new ones. They are frequent subjects for discussion, but it is rare to hear them all considered together, although they are closely connected.

All of them are strictly problems of a mechanical nature, with which the oil industry can perhaps help but can do very little without the cooperation of automobile manufacturers.

There is just one objective—to reduce the rate of wear in all motor vehicle parts, especially engine parts, and, fortunately, there are great possibilities. Nearly all cars now have a system of lubricant supply which is faulty under many conditions, and nearly all engines are given oils that, *on the average*, are seriously contaminated.

The desire for better engine durability is not so much for actual longer life, but for the reduction of service work while the car is still comparatively young. Most engine service of serious character is the elimination of small noises and the keeping under control of oil pumping. Both these are matters of engine wear mainly. By attention to the at present unconsidered phases of lubrication, service work on engines in their first 10,000 miles of life can be enormously reduced. Manufacturers of pistons and piston rings and the reboring firms are about the only members of the industry that stand to lose by "complete" lubrication.

Most recent effort has been directed toward the reduction of contamination. Air cleaners, real oil filters and dilution-reducing devices typify this, but hardly any attention is being given to other matters that are at least equally important.

Other Things to Be Considered

The more successful the dilution-eliminating schemes prove to be the greater the risks run on other counts, so if oil contamination were totally eliminated we should still have with us an important part of the problem, for the shortcomings of the conventional lubricating system would then show up all the more strongly.

The first ideal in laying out an oiling system should be the supply of a proper volume of oil to each moving part at every revolution, irrespective of any external conditions.

This is not realized in any automotive engine with which I am acquainted. It probably cannot be realized completely, but a much nearer approach could be made. It is furthest from realization in engines having a pressure

system, from the viewpoint of pistons and cylinders. It is furthest from realization from the viewpoint of crankshaft bearings on engines which do not have a pressure system.

The fundamental difficulty is the variation of viscosity of all petroleum products with temperature changes. All the great strides which have been made in lubricant manufacture have left this characteristic unchanged, and there seems almost no hope of changing it. The full range of engine temperatures, from zero starting up to high power running, inevitably involves a variation in viscosity of lubricant from 1 to nearly 50, even after making due allowance for the use of summer and winter types of oil. This means that, assuming an engine to be adjusted to be given a proper supply for summer running with a conventional pressure system, at least 50 times the pressure would be necessary to give an equally good supply for the depth of winter.

Pressure Varies with Viscosity

The pressure necessary to force oil through a pipe at a definite speed varies directly as the *absolute* viscosity of the oil, as long as the flow is smooth and not turbulent. Most automobile engine oiling systems have large enough passages so that turbulence should not be much of a factor. If we could vary the pressure in proportion to the viscosity, the flow would be nearly enough consistent for all practical purposes.

Suppose an engine with the conventional pressure system is adjusted so that the proper volume of oil is delivered with 10 lb. pressure when the engine and the oil are at normal temperatures; then the pressure required to give the same flow of oil at zero would be at least 500 lb. per sq. in.

Looking at it another way, with the same original adjustment, the dimensions of the pressure release valve might easily be such that, around zero, 50 lb. would show on the gage instead of 10. In this case it would be safe to assume that the amount of oil being fed was one-tenth of the normal quantity. Of course, the theory of the pressure release valve is to hold the pressure constant. If the valve did its job with theoretical perfection, then the engine, when started at zero, would only be receiving one-fiftieth of its proper oil supply. With the conventional oiling system, if the release valve were eliminated, to get the proper supply of oil for cold operation we should need pressures between 500 lb. and 1000 lb. per sq. in.

PART II of Mr. Clayden's article on the problems of satisfactory all-year-round engine lubrication will appear next week.

Of course, this is hardly practical and, while the abandonment of the pressure release valve recently urged by Neil McCoull would help matters, it is not the complete answer. Nor is a return to splash oiling a complete answer, because, while that will insure a good cylinder supply, it does little or nothing for the bearings. Yet, again, a combination of both pressure and splash fails because it would be extremely difficult to give adequate supply under high viscosity (extreme cold) conditions, without an oversupply when low viscosity prevailed.

Right now there seem to be two possibilities. The more attractive to most engineers is to employ a pressure system without a release valve and to use supplementary methods for supplying the cylinders under high viscosity conditions. The alternative is to use a splash system for the cylinders, a pressure system for the shaft, and supplementary mechanism to prevent oversupply under low viscosity conditions.

The complete failure in oil supply when the lubricant is highly viscous is not realized by more than a very few engineers. Frank Jardine last year described his extremely valuable experiments in this connection, but the fact that this work of his really meant anything outside the laboratory does not seem to be appreciated. What Mr. Jardine really proved is that every time a pressure system car is started up and driven in normal winter cold, it runs *several miles* without any oil whatever being fed to the pistons. How soon this can become several hundred miles those who use cars all winter through can swiftly realize. It cannot be doubted that the damage done under such conditions is far greater than that caused by dilution and contamination with dirt.

Now the solution to this problem does not appear to be either difficult or costly. First, let us assume an engine with a perfectly conventional pressure system. We can:

1. Remove the release valve and substitute a needle valve adjustment which will go a good way toward giving a constant supply of oil irrespective of temperature.
2. Add to this a means for supplying oil to the cylinders through a supplementary device under conditions of extremely high viscosity.

A number of methods have been suggested for the latter, and there are two obvious automatic ways of operating supplementary oiling schemes. First, the oil pressure on the delivery side of the pump and close to it will be abnormally high if the viscosity is likewise abnormal. So a valve can be arranged to function only under pressures far above normal, which will either throw jets of oil directly into the cylinders or will divert oil into a special manifold, delivering to the pistons through holes in the cylinders. The drawback of this scheme is the difficulty of making the initial adjustment on the release valve and also the possibility of the valve sticking in either the closed or open position. These matters are not serious,

however, and the additional cost is very small. For the original release valve a needle valve has been substituted, let us say, at a slight cost saving. We have then added a spring loaded valve plus a pipe, either internal or external, and if the former, a few cents would amply cover the cost.

If the special pressure release valve is objected to, its function can be performed by a thermostat which will divert oil to similar supplementary cylinder feeds below a set temperature. This does not seem so direct as the former method, because it is really the high viscosity of the oil, due to cold, that calls for the supplementary feeds, and the precise temperature at which they become necessary varies a great deal according to the nature of the lubricant. Thus the difficulty of initial adjustment would remain as before, the possibilities of derangement would not be utterly eliminated, and the device would not necessarily function in proportion to viscosity, as it really should do.

Where the thermostat appears to find its place is in cars having splash systems and oil pumps designed to give very low pressure. A good many pumps simply fail to suck in their full supply if the oil viscosity rises very high, but they can usually be relied upon to deliver enough to keep the splash troughs full, as their capacity at low pressure is commonly great. In this case what is needed to maintain the volume of supply to the moving parts is more splash, or a greater connecting rod dip, and a thermostat can be arranged to raise and lower the troughs.

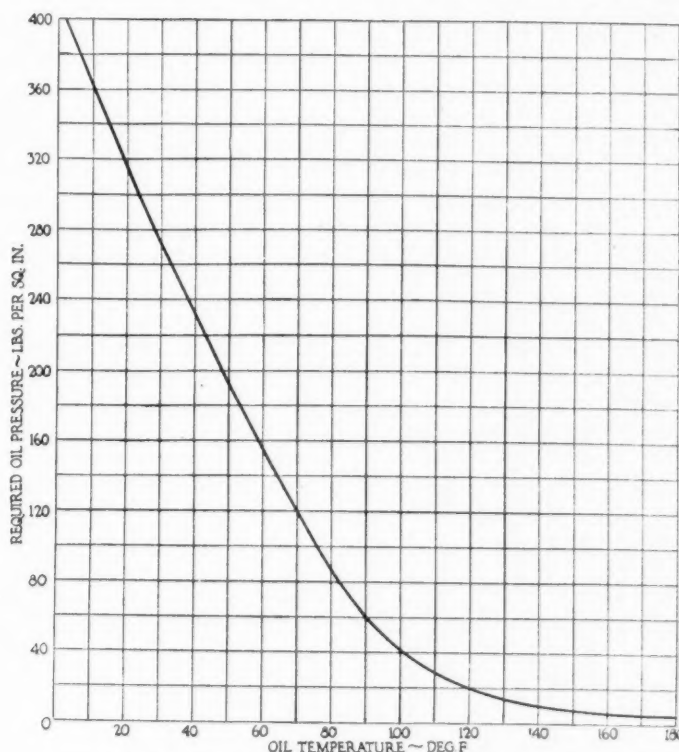
This adds considerably to the cost of the conventional splash system, but it has one advantage over the release valve scheme for

supplementing a pressure system, this being that the depth of the dip, and so the oil supply, would vary over quite a range between its extremes. To offset this, however, there is the same drawback, that viscosity is neglected and merely assumed to have some definite relationship to temperature.

Supplementary Feeds

Before leaving this branch of the subject I would like to point out again that the more we do to reduce oil dilution, the higher the average viscosity is going to be, and so the more vitally necessary are means for supplementary feeds during the warming up periods of running. Still more, the most promising method for overcoming dilution at present in sight will encourage the use of higher viscosity oils which makes the lubrication system part of the problem worse than ever.

Another thing is that the use of different oils for different seasons of the year, though essential now, would be an excellent thing to overcome. Not to have to do it would be a sales advantage for the car, because a distinct convenience for the owner, and winter oils are always makeshift in that they are used solely to take care of starting;



Variation of oil pressure with temperature necessary to give constant flow

the summer oil is better for lubrication once the engine is warm.

The refiners can supply oils with a high enough viscosity for maximum temperatures that are still fluid at zero or below, but they are very highly viscous at such temperatures. Given means for insuring feed mechanically with extremely thick oil, plus means for rapidly warming the main supply, and the same oil could be used in January and in July.

Overcoming dilution is the problem which is interesting engineers most right now. Once it is overcome the need for taking care of lubrication during warming up running will be instantly forced upon the attention of manufacturers; with the majority of cars dilution is their salvation in winter time.

The cure of dilution has been approached so far mainly from the device viewpoint. A special problem, a special accessory to take care of it. The Skinner system is already well known, as is the Parrish, both using a small exhaust-heated still to treat the diluted oil.

The distillator made by Motor Improvements Corporation is the latest thing of this sort, differing from other systems in that a very small quantity of gasoline is burned to supply the heat, on much the same principle as in the Packard fuelizer. These accessories may do excellent work, but it cannot be denied that they all aim to cure a disease instead of preventing it, and the prevention of

dilution would probably be better than counteracting it.

Work conducted by the Bureau of Standards with the Society of Automotive Engineers, and by several other investigators, has shown very clearly that average engine temperature has a great effect upon dilution, but the majority of these experiments have been made at degrees of heat insufficient to prevent the deposition of gasoline on the cylinder walls when running at low throttle. Also, most of them have been made with comparatively cool oil.

With water cooling, while the water outlet temperature may be 180 deg. Fahr., the inlet temperature in road running is often 30 deg. less, so the mean temperature of the cylinder walls need not be very high, even with what is usually considered maximum water outlet temperature. Outlet temperature is really indicative of cylinder head temperature, which is quite unimportant from the dilution viewpoint; what is wanted to prevent dilution is high wall temperature.

There is no way of getting high mean temperature which at present appears nearly as attractive as steam cooling. Working on the dynamometer and on the road with Rushmore systems, it has been the writer's experience that the outlet temperature is never more than four or five degrees higher than the temperature in the coolest part of the jacket, which means that the average jacket temperature is never less than 210 degrees and that cylinder walls and combustion chamber are all at essentially the same degree.

Determining the Power Required for Motoring an Engine

IT has been commonly assumed that the power required for motoring an engine at any speed is equal to the sum of the bearing friction loss and the pumping loss when the engine is under load at the same speed.

Is this a true assumption?

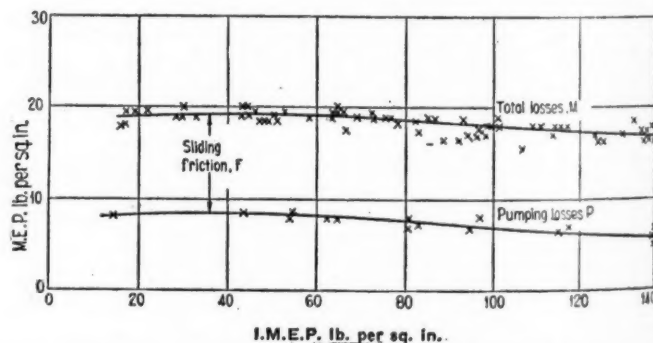
Experiments just completed at the British Air Ministry Laboratory indicate that it isn't.

The tests were made on a single cylinder from a Benz aircraft engine which was mounted on the Ricardo test bed. A compression ratio of 6.3 was used, which made necessary the use of benzol as fuel at full load, while at partial loads a 50.50 mixture of benzol and gasoline was used.

Results were reduced to a common basis of mean effective pressures, and it was found that the brake m.e.p. plus the "motoring" m.e.p. was too low at high loads and too high at light loads. The effect was greatest for diagrams with a sharp explosion curve, in which case the difference amounted to 10 lb. per sq. in. at 140 lb. per sq. in. i.m.e.p., or 7 per cent. With normal spark setting, giving a somewhat inclined explosion line, the error amounted to 4 lb. per sq. in. at 120 lb. per sq. in. i.m.e.p. or 3.3 per cent.

In Fig 1 are plotted the pumping losses under power and the total losses when motoring. It may be pointed out that the pumping losses under power were obtained by measuring the areas of the negative loops of the indicator cards, while the total losses when motoring were read off directly on dynamometer scale. The difference between the pumping losses and the total losses when motoring gave a sliding friction equivalent to 11 lb. per sq. in. m.e.p. When motoring with nearly closed throttle the pumping losses were 8.5 lb. per sq. in., falling to 6 lb. per sq. in. at full throttle, whereas under power they were 4 lb. per sq. in. on light load, increasing to 6 lb. per sq. in. at full load. Thus at full throttle there was no measurable difference between the pumping losses when motoring and under power. At other loads, the pumping losses were less under power.

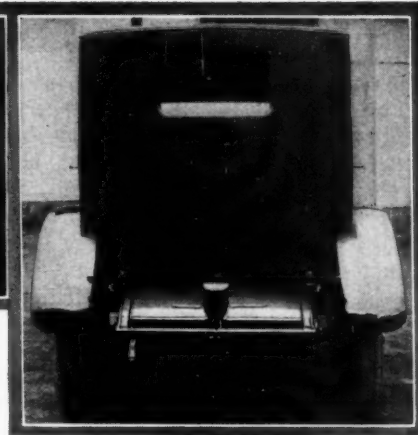
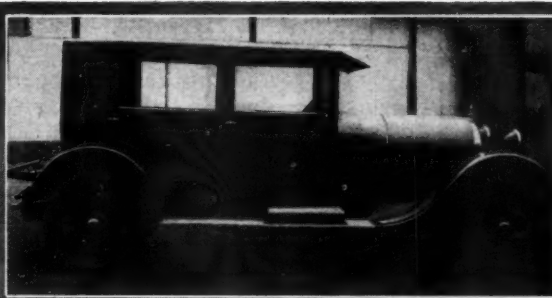
The fact that the pumping losses when motoring are usually greater than when under power tends to make the sum of the brake and motoring mean effective pressures more than the true indicated mean effective pressure, and this result is obtained at low loads. At high loads the increase in sliding friction counteracts this effect, and the two balance at about 70 lb. i.m.e.p., while above that the sum of the brake and motoring is less than the indicated pressure. As the pumping losses are the same under power and when motoring at full throttle,



Total losses when motoring and sliding friction losses under power, plotted in terms of equivalent mean effective pressure

the error at full load is simply the friction increase.

For very light loads the friction obtained was the same as when motoring, but the friction showed regular increase with load, this increase being much greater for advanced spark and sharp explosion than for retarded spark and flat explosion curves. With full load and sharpest ignition the maximum effect obtained was an increase from 11 to 21 lb. per sq. in. at 140 lb. per sq. in. i.m.e.p. while in what might be considered a normal case the increase was to 17.5 lb. per sq. in. The increase was large and the effect of changing the spark setting was decided.



Above—Straight line type of Weymann sedan fabric body with entire absence of molding. Note especially wide doors and how rear door is cut away over wheel well. Hood is covered in same

material as body. Left—Valance between fender and frame is filled in with sheet aluminum covered with Zapon. Right—Fabric leather in one piece from roof to frame on Weymann sedan. No molding used

French Builders Are Extending Use of Fabric Leather Bodies

Many companies making use of new construction. Greater silence and durability are advantages. Important saving in weight. Production cost is less than metal

By W. F. Bradley

FABRIC leather bodies are growing strongly in favor in France. Weymann must be given credit for initiating the move with his flexible wood skeleton covered with canvas and fabric leather, which experience has shown to be permanently silent and durable. While the number of firms building automobile bodies under Weymann license is limited, large numbers are making use of fabric leather on either wood or metal foundations.

Citroën and Mathis are in regular production on fabric leather sedans. In these two cases the fabric is made use of in place of sheet steel, with a saving in weight, in the case of the Mathis four-passenger sedan, of 80 pounds compared with the normal body. A considerably greater saving could be obtained if the framework were built specially to receive a fabric leather covering. It has been preferred, however, to keep the same construction for both metal-covered and fabric-covered bodies, although the frame is unnecessarily heavy in the latter case.

The advantage of fabric leather over metal is an entire absence of resonance. At present the fabric-leather body is sold at a slightly higher price than the metal-covered body. This appears to be done because the public is willing to pay for the novelty and not because of the increased cost of fabric leather compared with metal. With proper organization the former type could be produced cheaper than the latter.

The only automobile-producing firm in France building Weymann bodies is the Darracq Company. Having two types of chassis, of respectively 10 and 12 hp. (European rating), and a wheelbase of 118 and 126 in., this firm has standardized Weymann sedans for each.

Doing considerable export business to England, the

Darracq Company has adopted a line of construction somewhat different from that of the Weymann Company, by endeavoring to get as rounded an effect as possible and the greatest possible similarity with standard wood and metal bodies. Because of this, the tendency is toward increased weight and also greater rigidity in the wood skeleton. Weymann, on the other hand, is reducing the weight of his skeleton frame and is adhering as closely as possible to straight line effects.

The Darracq Company is putting Weymann bodies through in series of fifty, the whole of the frame members being cut up at once and the holes for assembly by steel plates being drilled in jigs. Ash is used throughout, and as far as possible the frame members have the uniform size of 40 by 40 mm. (1½ in.).

Aluminum for Round Effect

To get the rounded effect which appears to be essential for sale on the British market, sheet aluminum is used for the quarter rear panels and mill board is used for the back panel. Sheet aluminum is also used for the cowl, with the result that although frequently described as flexible, the Weymann skeleton, as produced by the Darracq Company, is really a rigid construction with assembly of all the metal parts by iron plates with an air gap between wood members. Although practically rigid, so far as assembly is concerned, this skeleton undoubtedly eliminates all body squeaks which is a condition difficult of attainment with the normal construction of dovetailed, glued and pinned joints.

The weight of the complete Darracq-Weymann skeleton, assembled ready for covering with linen and fabric leather, is 220 pounds, this being for a four-passenger sedan having a length of 108 in. Each door, measuring

48 by 25 in., completely covered with fabric leather on the outside and cloth on the inside, weighs 19¾ pounds. This weight is without glass, but includes the crank and chain for raising the glass.

The total saving in weight on a Darracq-Weymann, compared with a normal wood and metal body on the same chassis, is 1985 pounds; this makes the weight of the sedan exactly the same as that of a wood and metal phaeton. Apart from the method of assembly, there is no doubt that the very low weight of the structure, together with the fact that no portion of the useful load is carried on the body itself, contributes considerably towards the permanent silence of the Weymann construction.

Labor Saving 15 Per Cent

The Darracq Company estimate the labor economy on a Weymann body, as compared with a normal construction, as 15 per cent. Doubtless it would be possible to cut this considerably if bigger production could be undertaken. Fabric leather bodies, however, are still a novelty and the buying public requires, if not a custom built body, at any rate a semi-custom body, which naturally adds to cost.

The economy is offset, however, by the higher grade of material it has been considered necessary to put into these bodies. Undoubtedly economies could be made in this respect, for some of the foundation layers of linen and cotton wadding could be of lower quality without any serious inconvenience. Those for the Weymann construction appear to have been much more anxious to secure a reputation for quality than for cheapness, and although the design does lend itself to low cost of production, the selling price is generally higher than for a body of normal construction.

It is quite insufficient to stretch the fabric leather on the wood skeleton. A foundation has to be built up of linen cloth, cotton wadding and in some cases mill board. In the case of the cowl the foundation on which the fabric leather is laid runs as high as four thicknesses. The first is a layer of thin fabric leather with its finished surface to the inside of the car; cotton wadding is laid on this; then a heavy cotton cloth, a fine cotton cloth, and the final covering of fabric leather. All the fabric is tacked on and in some cases the cotton cloth is wetted to obtain drum tightness.

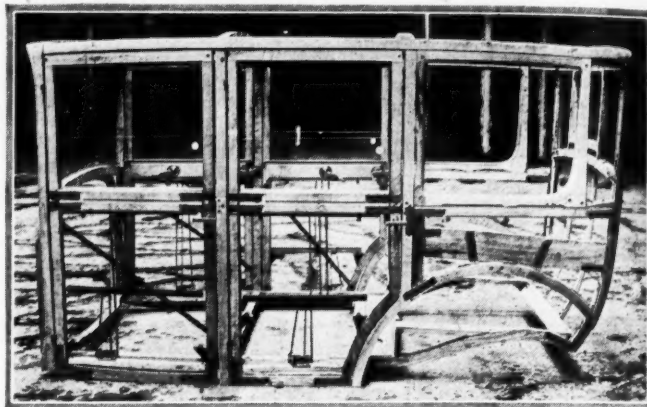
The make of fabric most extensively employed for Weymann construction is Zapon. The Darracq Company is also using Fabricoid, and is making some use of English Rexine. French-produced fabric does not appear to have given satisfaction. With a view to meeting English taste, most of the bodies built by the Darracq Company have two grades of leather, the upper portion being black, and the lower portion colored. The joint is covered over by beading. This adds to cost by reason of the additional labor involved and the wastage in cutting up for the smaller panels.

Metal Parts Rust Proof

It has been found necessary to make all metal parts rust proof in the Weymann construction. The metal plates by which the frame members are assembled are dipped in red lead before assembly and the bolt heads are painted with red lead before the fabric is put on. It has been found that if these parts are allowed to rust the fabric covered is liable to rot.

The Weymann Body Company, producing nothing but fabric leather bodies, is constantly experimenting and modifying its designs and types. Whereas on the first bodies the frame members were 40 by 40 mm., later 20 by 20 mm. (.78 in.) was adopted, and the size most

generally used at the present time is 25 by 40 mm. (.9 by 1.5 in.). The tendency in France at the present time is towards unbroken straight lines and right angles, and this fashion makes it possible to reduce cost of production. With the square type of body, there is no necessity for aluminum panels and all the assembly can be done by metal plates and bolts. In place of steel, aluminum is now being made use of for the assembly plates. Under the present severe fashion a uniform grade of fabric leather is used for the entire body. This



Weymann body skeleton ready for covering with fabric

not only reduces labor in tacking and fitting the fabric, but eliminates a certain amount of waste in cutting up, and avoids all necessity for beading. It is usual when this body line is adopted to cover the baggage trunk and the hood in the same material as the body, thus giving a uniform appearance from radiator cap to tail light.

The only painted parts are the fenders. Varnishing the fabric has been found very unsatisfactory. In some cases very rapid deterioration has set up after varnishing. If a fabric leather body does not have the same brilliance as a metal construction, it is doubtless easier to maintain. Fabric leathers having a dull finish and a grained surface are the most extensively employed for the French market. The only disadvantage of the grained surface is that dust tends to become embedded in it, giving a dingy appearance after a short time. The best way to maintain such a body appears to be to treat it like a pair of shoes, by polishing it with a brush and furniture cream or leather reviver.

Fabrics Used on Valances

Originally three hinges were used on Weymann doors. These were reduced to two, and at the present time very successful use is being made of a pair of hinges having a conical seating, with a small bolt going through the center of the cone. To save weight and eliminate any possible rattle the valances between the front fenders and the chassis are formed of sheet aluminum sandwiched between two layers of fabric leather. The fabric is glued to the aluminum and extends beyond both the top and bottom edges, attachment being made to the fender and to the body by the fabric only.

The method of carrying the front fenders and the headlights is distinctive. Two vertical supports, of oval section, formed of two sheet steel pressings welded together, are bolted to the chassis frame members and have an eye formed in their upper end through which a steel tube is passed. The extremities of the tube, outside the vertical supports, carry the pair of fenders, which are bolted at their lower end to the running boards. The headlights are mounted on the transverse tube by a split block clamped to the tube by a bolt.

Just Among Ourselves

How About a Factory Used Car Sales Manager?

A GOOD many dealers have found it profitable to have a separate used car department, often in charge of a used car sales manager. Why couldn't a national used car sales manager find a real place for himself in the factory sales organization? His work would be of a different character than that of the regular sales manager, of course, because his interest would not be in disposing directly of the product built by the factory. But if he knew his business and looked hard for things to do, he might readily earn many times any salary he would be likely to get. We could outline a lot of things that a factory used car sales manager might do, but we're going to refrain for the time being for fear we would indicate too limited a scope for his activities. The possibility of creating such a factory position is well worth considering.

Adventures in Automotive Heel Cooling

DESPITE the fact that we aren't a salesman, we have done a lot of heel-cooling in our time. But waiting around doesn't perturb us as much as it might, because there's no place in the world where one can get a better idea of the spirit behind a manufacturing plant than in the waiting room where it receives its guests—not its special guests, but its regular everyday visitors, casuals on the sea of commerce. Frigid or warm, high-hat or democratic, pleasant or grouchy, friendly or hostile, the reception room usually reflects the attitude of a plant toward the outside world. It may treat the salesmen differently than the company actually treats its customers, but its attitude toward salesmen usual-

ly indicates how the company would like to treat customers—if they weren't customers. And after all that's the important thing, because in every day operations the attitude of any man of the company must be unconscious rather than studied. It's too hard work to keep a mask on all the time.

Reception Clerks We Have Met

SOMETIMES the personality at the reception desk does give a false impression. Those are most unfortunate instances, because the information clerk makes thousands of friends or enemies for a company every year. He—or she—influences many more people by personal contact than does the president of the company. We divide reception clerks into three general classes: the elderly man, who probably has made a failure of his life and who tries to cover up that failure by investing his present job with an overwhelming mass of excess dignity; the sweet young thing, who thinks she may cop a husband out of the crowd of Nordic blondes who swarm before her every day—she can't read a name correctly and gets insulted if anybody is in a hurry; and lastly, the man or woman—old or young, handsome or plain—who takes the reception desk as an ordinary business job, best accomplished if performed with a smile, but one which calls for solicitous attention to the personal wants of a number of people, who sees the job as a service function rather than as that of a king dispensing favors. We've had more than one quiet smile at the spectacle of a \$15,000 a year salesman being high-hatted by one of the Lords of the Reception Chamber. Our soul is full of many more things to say on this subject, but we'll reserve them for another time.

More Profits May Come Without Greater Volume

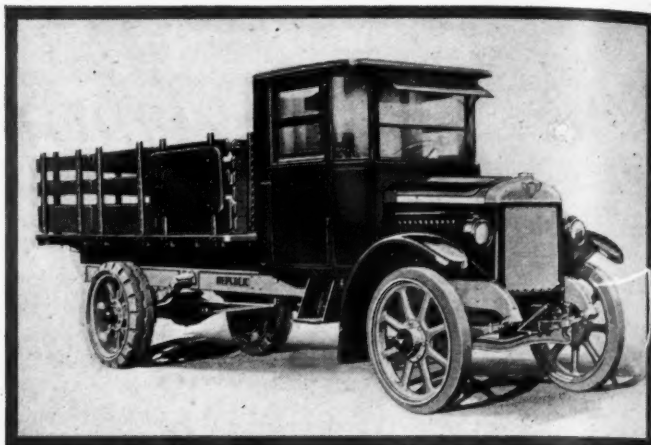
STUDEBAKER'S financial statement for the first three months of 1925 shows some interesting points. In the first quarter, as compared with the same period in 1924, Studebaker had a very slight increase in production, a slight decrease in net sales in dollars and cents, but still a slight increase in profits. The answer, of course, lies in the decrease in operating expenses and depreciation. The chief end of business is to make a profit. High production figures are desirable and large gross sales look good, but after all the important thing is net profit. All other factors in the business structure should be viewed in their relation to it. More than one company this year may find the way to profits through more efficient methods rather than through mere increase in volume.

Removing Snow Where There Is Some Snow

THE 1925 edition of *Facts and Figures*, the annual N. A. C. C. "What's What About the Automobile Industry," has in it a great lot of interesting things but none which appeals to our bent for the novel quite so much as the bloody-looking map on page 46 which has white lines on its vivid red background to show roads in the United States where snow removal is provided. What seems to us unusual is that the State of New Mexico has quite a fair sprinkling of white lines while such northern States as South Dakota and Wyoming have nary a mark on them. We tried to get the snow removal contract for the road to Mandalay last winter but found that the sun which comes up there is so thundering hot that outside assistance wasn't needed.

N. G. S.

Cab Arrangement a Feature of New Republic 3-Tonner



The new Republic 3-ton truck

*Greater visibility for driver obtained by diagonal front windows.
Gas tank and tool box accessible without removing seat. Engine is
4-cylinder Waukesha with Ricardo head. Standard wheelbase 165 in.*

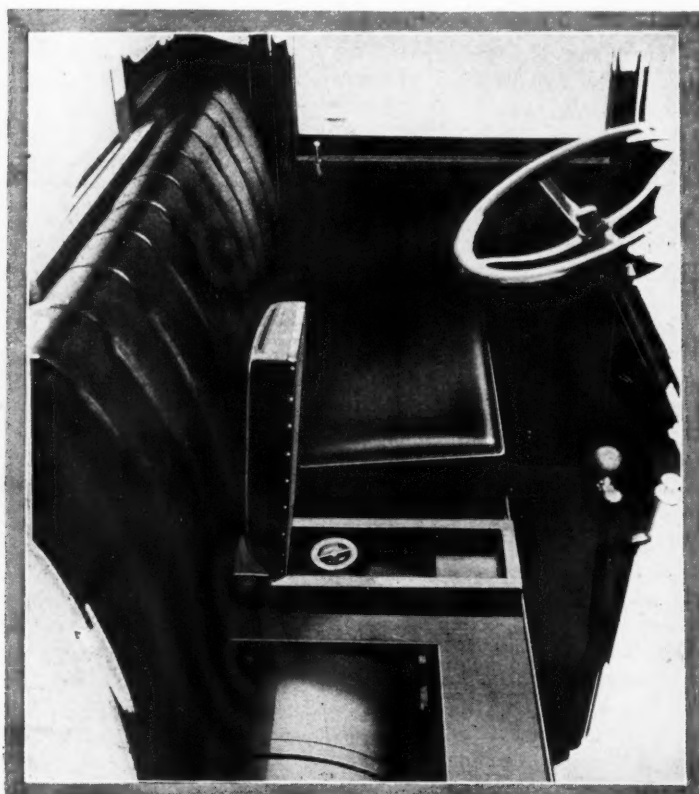
A NUMBER of refinements have been incorporated in the new 3-ton truck chassis announced recently by the Republic Motor Truck Co., Inc., of Alma, Mich.

In addition to a redesign of the entire chassis, considerable attention has been given to the construction of the cab, although this unit is not included with the standard chassis. While the windshield is narrower than formerly, diagonal panes are placed at the corners to improve the driver's vision.

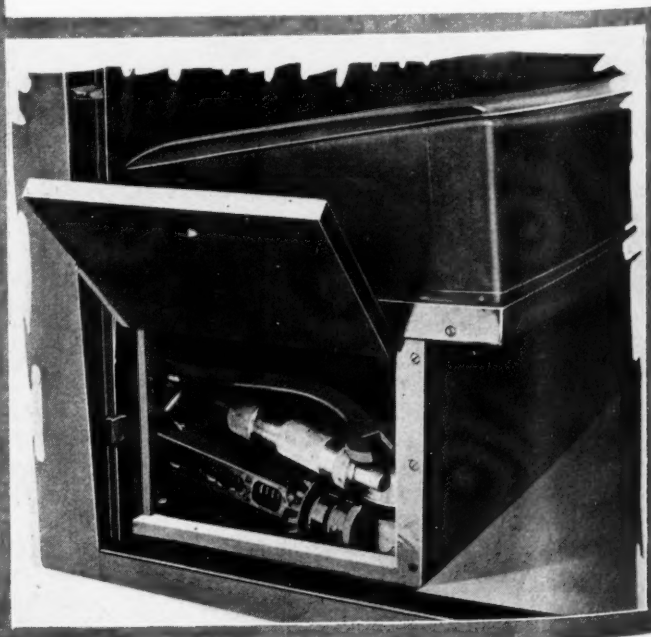
All joints in the cab structure are fitted very closely to insure protection from the weather and the doors are equipped with sliding storm curtains. A more comfortable seat arrangement has been adopted and it is unnecessary to remove the seat cushion to get at the gas tank

filler cap, as the cushion has been divided to leave a narrow hinged section at the center. The tool box also is closed by a hinged door at the end of the seat box.

Pressed steel is used for the side members and the section has been made much deeper, the length from the back of the driver's seat to the rear being 133 in. All springs are semi-elliptic and are alloy steel. A semi-circular cross member has been located between the side members at the front brackets for the rear springs, while a separate rod joins the rear brackets. This construction allows the shackle bolts to be made of the regular hardened steel. Van steel wheels are used all around and solid tires are standard equipment, the regular sizes being 36 x 5 at the front and 36 x 10 at the rear. Pneumatics, 36 x 6 at the

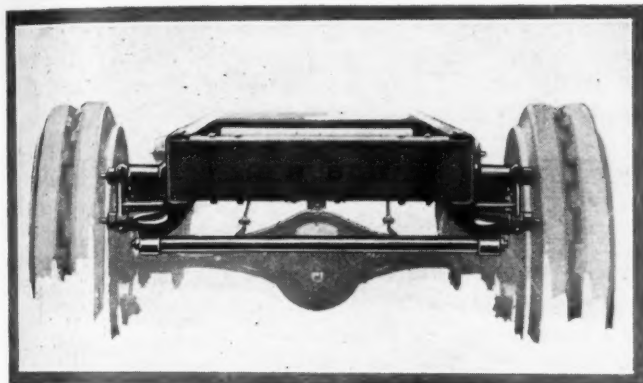


The gasoline tank of the Republic truck may be filled by lifting a small section of the seat. The driver does not have to leave the wheel. Below—Tool compartment under seat at the right. Quickly accessible by means of end door



front and 40 x 8 at the rear, with demountable rims, are optional at extra cost. The tread is 60 in. and the standard wheelbase is 165 in., although wheelbases of 156 in. and 185 in. are available.

A four-cylinder Waukesha engine of 4 in. bore and 5 $\frac{3}{4}$ in. stroke supplies the motive power. This engine is equipped with the Ricardo head, which is detachable. Four main bearings are fitted with bronze-backed, Fahrig metal-lined split bushings. A gear type oil pump supplies full pressure lubrication to the crankshaft, camshaft and connecting rod bearings. Cooling is facilitated by a centrifugal water pump. Speed is controlled by a built-in centrifugal governor. Ignition is by a Bosch high tension



New Republic rear spring hangers, showing rigid tie rod. Spring bolts are of special heat-treated steel and entirely separate from tie rod

magneto with the spark regulated by a manual control on the steering column. An air cleaner is installed on the intake opening of the Stromberg carbureter. An attractive radiator completes the cooling system and may be equipped with a distinctive shield-shaped radiator guard at a slight increase in cost.

Three-point support is used for the engine and a Fuller four-speed gearset is mounted as a unit with the engine. Ball bearings are used throughout the gearset and provisions are made for the installation of a tire pump and power take-off. Gear selection is made by a central ball-mounted lever. The intermediate unit is a Fuller multiple disk clutch of the dry type which is inclosed by the bell housing. Spicer joints are used at the three joints in the two-piece tubular propeller shaft construction. The service brake is located on the forward section of the propeller shaft, just in advance of the intermediate bearing, which is supported by the center cross-member. Two shoes bearing on a pressed steel drum are actuated by the foot pedal.

Eaton axles are used at both front and rear, the former being of conventional I-beam construction while the rear axle is of the double reduction type in which the live axles transmit the power to a ring gear carried by the wheel. Internal expanding emergency brakes also are carried by the rear wheels.

Worm and Split Nut Steering

Steering is accomplished by a Jacox worm and split nut gear which is mounted in a capped bracket located on the under side of the left side channel. Fuel supply is carried in a 16-gal. tank located under the driver's seat and a filter and sediment trap are installed in the fuel line. Pressure gun fittings are placed at the various lubrication points on the chassis and the brake cross shaft bearings are equipped with oil-less bushings.

Front fenders, oil lamps for sides and rear, mechanical horn, jack and tool equipment are standard.

Several items of special equipment include the following: Bumper, radiator guard, tow hooks, draw bar, electric starting and lighting, power hoists and winches. The hood, dash with instrument board and toe and foot board are included with the chassis. A variety of body specialties, including the weatherproof cab, have been developed to apply to the standard chassis.

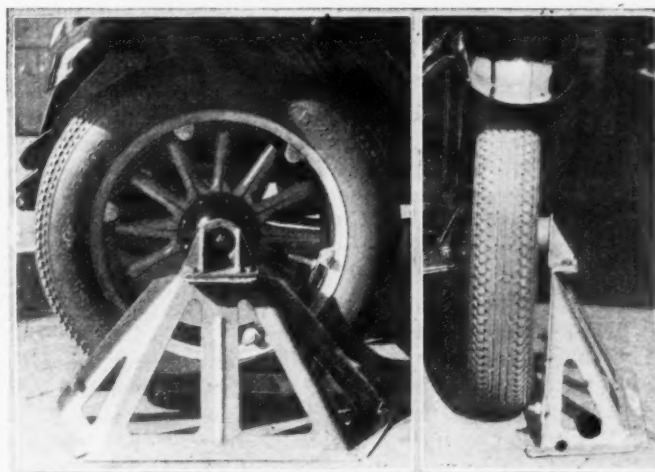
Automobile Loading Anchor

A NEW device for use in loading automobiles in freight cars for shipment has been developed by two Detroit engineers and is expected to result in material savings in the cost of loading and in preventing injury to tires, etc. It is known as the automobile loading anchor and is the invention of H. P. Meredith, general works engineer, and L. I. Friedlaender, mechanical engineer of the Maxwell-Chrysler Corporation, which concern has been given shop rights and is now using the device. Patents on it are held by the M. F. M. Company, 308 Scherer Building, Detroit.

The anchor consists of a triangular base which is nailed to the floor of the freight car, and a threaded cap which fits over the wheel hub of the automobile, this cap being bolted to the floor section. The anchor is so designed that it can be used for all makes and models of car and tire, and is so arranged that while the automobile is in transit the tire does not come in contact with the loading device; consequently there is no danger of chafing or otherwise damaging the tire or the automobile.

Should a tire become deflated in transit, it will not be damaged by rim cutting, as happens with some of the devices now in use. The necessity for workmen crawling under the automobile to secure it for shipment, with incident danger and loss of time, is eliminated. We are informed that the time for loading and unloading automobiles into and out of freight cars can be reduced by one-half, as compared with the methods now in use.

The device is made of steel stampings and is so designed that it can readily be removed from the loaded car without damage to the automobile or the device itself, nested or collapsed for return to the manufacturer at low cost and re-used indefinitely.



The automobile loading anchor in use

ACCORDING to a report from Paris, the Bethune Coal & Coke Co. plans to produce fuel alcohol from coke oven gases on an industrial scale. From 30 to 40 lb. of alcohol are obtained from the carbonization of a ton of coal.

Closer Cooperation with Gear Makers May Cut Car Builders' Costs

Gear manufacturer points out how members of his industry, who are specialists in their line, can frequently suggest an improvement in methods or design which will give the customer better results.

By E. B. Baltzly

Assistant General Manager, Warner Gear Company

CHANGES of a commercial nature are rapidly taking place in the entire automotive industry. On one side are the specialized parts makers of large proportions. On the other side are the vehicle manufacturers, some very large, others small. In the background is clearly seen a large buying public followed by many indistinct figures to the rear, representing the future prospects. Looking again to the left of the picture we see some of the parts industries are no longer bright and clear. It is evident that there is a struggle going on, on both sides.

Most vehicle manufacturers are equipped to produce more cars than they can sell. Each has striven to hold or to increase his business at the expense of others through lowered prices and various stimulants at his command, saving for himself a dollar or a dime of cost wherever possible. Whether he is a large manufacturer or a small one, building many of his own units or not, the battle is the same; the struggle as fierce. Today one drops and is pushed aside but there is no victory and no abatement. A new contender, perhaps already battle scarred, appears here and there but the picture is no brighter—no better. It cannot be until overproduction has ceased and prices become stabilized.

The specialized gear industry is vitally concerned with the entire aspect. It could supply better gears and units, and perhaps at less actual cost, to some of those manufacturers who are now building their own, but at this time efforts can be made more helpful by seeking a closer cooperation with its own trade.

It should offend no one, if it be said that in many business relationships between seller and buyer, there is now no true cooperation. The value of close cooperation is so great and so far under-estimated that considerable pains should be taken by the gear specialist to make his customer fully realize all that it might be worth to him. Perhaps its possibilities and how to establish it must first

THE author of this article discusses a problem which is more or less common to all parts makers—the problem of how to bring about a closer and more satisfactory business relationship with the car builder.

His views on the subject are presented as those of a gear manufacturer but the general situation which he describes applies equally as well to the problems of many engaged in other phases of the parts making business.

The article is an abstract from a paper prepared by Mr. Baltzly for the Ninth Annual Convention of the American Gear Manufacturers Association, which is being held in Pittsburgh this week.

be demonstrated at home.

Price is not always the first consideration, but it is the final one and generally has most to do in governing the purchase. It is of course based upon certain specifications and standards at the outset, but in the final haste of closing a contract all expectations are not always fully understood. In dealing with large customers, the buyer, having made the purchase, very frequently has little more personally to do with the transaction. The inspection and manufacturing departments then make their demands, goods are rejected, difficulties arise and there is no court of equity.

Price so largely enters into all materials for the

vehicle today that the engineer is forced to confine his specifications within the narrowest sort of margins. A little heavier axle at certain vital points, a little larger bearing or wider spread, for example, oftentimes would give complete relief from rejection of a set of commercially good axle gears that must now be condemned and replaced by the maker. A little stiffer part adjacent to a transmission or a better "hook-up" might reduce noise in that unit and save it from condemnation.

Rejection Easy Matter

Because these various parts are bought and not made in his own plant, rejection becomes a comparatively easy matter. A better understanding between seller and customer could eliminate unnecessary work on gears that may have no relation to their service. Such understanding would reduce the cost to the customer and more than pay for a better mounting or the stiffening of some vibrating minor part.

The gear maker should insist upon knowing all about how his product is to be mounted and used. The past practice of too frequently accepting an order knowing little of the application of his product has caused grief not only to him but to the car maker as well.

Experience has shown that the car manufacturer, attempting to assemble his gear units, occasionally overlooks important essentials in his design. In rear axle practice, for example, even a weak or deflecting mounting can be utilized successfully if the gear specialist knows the conditions and can cut his gears with a bearing to compensate. There are some extreme instances of this sort where on the rigid test stand as used in the producer's shop, the tooth bearing had to be scarcely more than a point contact, yet in the axle there was a good bearing and the gears gave long service, while with a normal bearing the gears would break.

Blamed on the Gears

The gear maker not infrequently delivers a good product which gives some trouble in the field. The car manufacturer is prone not to tell him much about the situation. In fact, he may not know what is actually the cause and appears none too anxious sometimes to look for it in parts of his own construction. That the gears themselves have proven inadequate is sufficient. They must be replaced with harder gears or of some modification. His representatives may advance many theories of solution. The gear maker will nevertheless carry out instructions and if they don't prove out, he bears the expense just the same.

The experience of the gear maker has now become so broad and his product under such complete control that there is no longer any problem of gearing that he cannot successfully solve. But he must have full cooperation from his customer and be free to observe and study all the facts. The benefits are of mutual value and too much emphasis cannot be placed upon the great importance of closer cooperation.

Many automobile manufacturers greatly underestimate the value of the experience of the gear specialist. Not very long ago a prominent manufacturer of automobiles, cutting his own gears, was obliged to scrap over a hundred thousand dollars of materials because of faulty design. He could not jeopardize his business by continuing to consume this raw stock and it meant a big loss to him.

The Gear Maker's Experience

The manufacturer purchasing his gears is free from all such possible hazards, the extent of which he cannot realize exists unless he should get into the manufacture of his own gears. The gear maker has had many years of experience with a very wide application of his product so that he has never been involved in costly losses like the one cited above. He has made similar errors, but they were made years ago when production was much smaller and the mistake meant a comparatively small loss of unusable material. His experience of any failure of design on one car instantly forestalls the same error of application with his other customers and thereby is the manufacturer, who constructs his vehicle of specialized gears, saved a great deal of grief.

No short and easy road to gear success has yet been found.

The automobile manufacturer must carefully select his source of supply. All gear manufacturers do not practice the same standards. Some are better equipped both in the shop and in personnel. Gears are too technical a product to be bought on a purely price basis, but the better gear maker will deliver the greater satisfaction to the manufacturer of the vehicle, better satisfy the user and in the end be the cheaper source, not alone for his better quality but also for his dependability in delivery and his ability to back up his product.

The automobile manufacturer is in a feverish condition

at this time. Those who are purchasing their gears are striving for a better price believing there is still some margin which can, by sharp jockeying, be obtained. The orders are passed down to the man sitting in the purchasing chair that he can pay so much and no more. The whole cost of the car has been refigured and a certain reduction in total cost is definitely proportioned to the materials, at each new buying period. The manufacturer has studied the cars of the principal competitors in his field and is resolved to meet them with a new price cut.

Price is a weapon that has been freely used and its sting is sometimes severely felt by those whom it can never hope to reach vitally. Price is an efficient weapon when used at a psychological time and sparingly, but beyond that it is weak and useless. Price without quality cannot prevail.

Automobile manufacturers considering the installation of special equipment to produce their own gears may be wrongly advised as to costs. Actual operation overhead figures too may be much underestimated.

Heavy Investment Required

The investment to be made in equipment, to produce his own requirements of gears and gear parts, is, at the outset, very likely to be appreciably under-estimated, because he estimates solely on the capacity of the various machines running steadily throughout the year and the total number of units which could thereby be produced under those conditions. The actual facts, however, are quite different. Production runs to peaks and valleys in this industry and to take care of the high production at certain periods of the year it is necessary to have a surplus of machines, with complete jig, fixture and tooling equipment available.

New machine tool prices are today very high and perhaps double what they were when the gear maker procured the bulk of his equipment, now inventoried at a

PRICE AND QUALITY

Mr. Baltzly says:

"Price is a weapon that has been freely used and its sting is sometimes severely felt by those whom it can never hope to reach vitally.

"Price is an efficient weapon when used at a psychological time and sparingly, but beyond that it is weak and useless.

"Price without quality cannot prevail."

greatly depreciated figure. Over-capacity already exists in plants of the car manufacturer as well as with the gear maker and it is therefore unsound economically to add to it. If complete and actual costs of the gears as made in the car manufacturer's own plant, including the increased operation overhead, together with the cost and depreciation of the investment, were taken, there are many good reasons for stating they would reflect a higher figure than a purchased product.

There is in the air the possibility of evolution which might mean discarding of newly acquired equipment before it has materially depreciated. With all machine tools goes special and costly tool equipment which is largely of no value to the car manufacturer when the design of the piece to be machined is changed. The manufacturer who buys his gears has no definite figures

on these costs as they are absorbed in the price of the gears. If gears were sold to him with all tool, jig, fixture and die charges invoiced separately, he would better realize, no doubt, how little he is paying for such an important item.

The gear maker, to continue as an economical source of supply to the vehicle manufacturer, must have a certain volume of business and of not too much variety, if he is a unit maker. If his business should shrink to small volume, he will be unable to continue and the car industry will lose its leader of all these years in the practical development of power transmission for its vehicles. There is still much work and it is unlikely that such would be carried on as rapidly or as far by others as the gear specialist would push it.

The gear maker can no longer leave any customer to solve his problems alone if his thoughts are at any time bent toward making his own gears. Perhaps he might

reach a decision to this end without consulting the gear manufacturer; therefore my plea for closer cooperation, that the manufacturer may weigh gear makers' statements before reaching his conclusions.

The gear maker and customer have a broad common ground on which to stand together. The wide experience, ability and equipment of the gear maker is available to the automotive manufacturer, offering advantages which have not always, of late, been fully recognized.

The manufacturer can economically utilize more of the service of the gear maker because he has the best of equipment in abundance, with the knowledge to meet and the willingness to provide for any situation. He, too, can best continue to carry on the necessary development and to set the required standards of quality. Modified or new and better ideas in gearing for the future are only in keeping with his accomplishments of the past. He has proved his ability to advance with the times.

Ford's Letter to His Dealers on Used Cars

FOLLOWING is the text of the letter which the Ford Motor Car Co. recently sent to its dealers in announcing the new policies which hereafter will govern the handling of used cars:

"TO ALL FORD DEALERS:

"This letter is straight to the point.

"Too many of our dealers lost money during the past year in the used car end of the business because of exorbitant allowances on cars taken in trade. On the other hand, a large number of our dealers made profits on used cars—one dealer making over \$15,000.

"Your balance sheet will tell you which class you are in.

"Have you been fair to yourself and to Ford owners from whom you have accepted cars in trade—and have you been fair to neighboring Ford dealers?

"Or have you permitted your salesmen and the used car owners to persuade you against your better judgment to make allowances which have resulted in actual losses to you?

"You know Ford prices have never been inflated to carry trade-in allowances, that our dealers' commissions have always been based upon a good, fair margin of profit which we want our dealers to make. This we have always felt necessary in view of the high standard of representation which we have asked of them. On the other hand, Ford owners, in view of the high quality of our product, nominal first cost and economical maintenance, are not expecting more for their second hand cars than a price which will enable the dealer to realize a profit on the sale of each car taken in trade.

"We find the reason for loss of profits on the part of a number of our dealers is unfair competition with other Ford dealers on sales involving trade-ins and this is the phase of the used car situation that we are checking into and intend to correct, because we do not propose to permit any one of our dealers to represent our company in such a way as to act to the detriment of one or more of his neighboring Ford dealers. Please reread this paragraph and keep that point in mind.

"Are Ford dealers who show losses in used cars inferring that our Dealers' Commission is too large—that less commission would mean less profit given away?

"We have already started to closely check the activity of our dealers so as to properly classify each dealer as

either a "good" or a "poor" merchandiser, and summary action will be taken in the elimination of Ford dealers who persist in being "poor" merchandisers of Ford products.

"Your experience by this time should be your guide in placing the proper valuation on cars taken in trade (at least until such time as we provide a more uniform method of handling) to permit of your making a gross profit of at least 20 per cent on used cars, the same as you receive on new cars, instead of actually losing money in this end of your business. Just remember that a used car "bought right" is "half sold."

"We don't mean that because good sound business judgment is to be used in placing the proper valuation on used cars that your NEW car sales should taper off; on the contrary your sales should increase as we are now preparing a national used car advertising campaign to reach the tremendous field of used car buyers and direct them to authorized Ford dealers for the purchase of both new and used cars. This should assist our dealers in finding a ready market for used cars, further particulars of which will be furnished you through the branch later.

"Further information will be sent you later by our branch and in the meantime we ask each dealer to read and properly digest this letter and then take inventory.

"There is no place in our organization for a "poor" merchandiser of Ford products.

"Yours very truly,

"FORD MOTOR CAR COMPANY.

"(signed) W. A. Ryan,

"Manager of Sales."

A RECENT survey made by a firm of consulting engineers showed that one of the new type buses which carry sixty-seven passengers transported as many people through the streets in a given period of time as forty automobiles. It showed, too, that if 1 per cent of the street space were utilized by buses and 99 per cent by private cars, allowing for proper clearances, the passenger carrying capacity of the street would be increased approximately 23 per cent.

The survey showed further that the bus used less than half the street space required by the street car, with the additional advantage that the bus is more mobile and less obstructive of following traffic.



Fig. 1—Fountain feed for bringing cylindrical parts into contact with the grinding and control wheels.
Fig. 2—Feeding small, thin discs by means of a rod and tube

Centerless Grinders Now Used to Turn Taper Shanks and Ball Ends

Many other classes of work, formerly considered beyond the range of this type of machine, also being handled at high rate of speed.

By W. L. Carver

CENTERLESS grinding as a part of the automotive production program has made considerable progress away from the original conception which involved passing a plain cylindrical piece between a pair of abrasive wheels. While this type of work still forms an appreciable part of the range of possible operations, several other forms are being processed through centerless grinding machines at production rates which are two to six times as great as those obtained by former methods.

The first variation from the so-called "straight through" method which produced plain cylindrical parts, such as rollers, shafts and pins of various types, was the shoulder method, in which parts such as engine valves and valve tappets were fed in against a stop or placed in position between the wheels for the grinding of the stem or barrel diameter.

This class of work continues as a large portion of the field of the centerless grinder, but recently several new possibilities have been developed which at first glance do not seem to fall within the range of the centerless grinder. Ball ends, taper shanks, formed surfaces such as those found on the barrels of fountain pens and similar composition and metal parts, and larger parts which appar-

THIS is the first of three articles on the general subject of Centerless Grinders and the many different classes of production work they are now handling in automotive plants. The second will appear in an early issue.

ently are outside of the field of this type of machine are now being handled on an excellent production basis.

It is the purpose of this article, which is the first of three, to discuss some of these operations as related to the various types of centerless grinders. No comparison of the machines is intended.

In each case, typical operations ranging from the plain cylindrical to the formed types will be described, with discussion of the incidental equipment.

Where feasible, the production rate will be given, although this figure as applied to centerless grinding work is misleading as a basis of comparison between two jobs which apparently are similar. The amount of stock for finishing purposes, the hardness and nature of the metal and the form of the piece all are variable influences which make direct comparisons with work from another shop inconclusive.

The illustrations for this article are taken from the Cincinnati centerless grinder. Straight through work is illustrated by Fig. 1, which shows a fountain feed arrangement for grinding piston pins. The angular fountain, which is loaded by the operator of two or more machines, curves at the bottom to match with the adjustable guides that are part of the standard equipment of

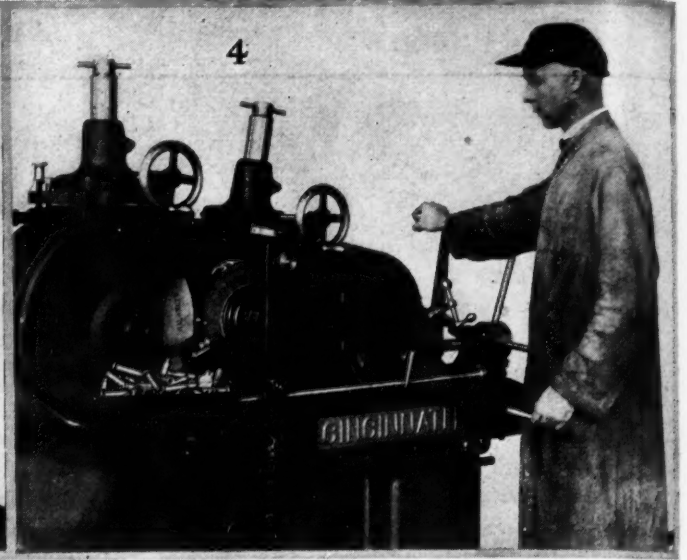
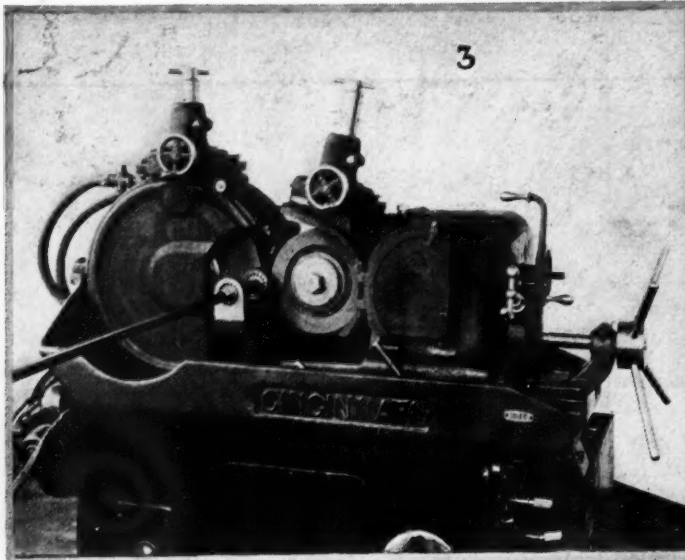


Fig. 3—Reducing squares to rounds by means of a special rotating head. Fig. 4—Simplest form of shoulder work, producing valve tappets

the machine. Therefore the pins are brought to the wheels by gravity, although the rate of feed between the wheels is determined by the angular adjustment of the smaller or feed wheel shown at the right.

As a matter of fact, this wheel does not rotate the work, but serves as a brake on the rotation which is set up by the grinding wheel at the right. The feed wheel is given a slight inclination in the vertical plane and the surface which contacts with the diameter of the work is dressed to a straight line which is parallel to the surface of the grinding wheel. The angle of inclination determines the rate of feed past the grinding wheel. Finished size can be maintained within limits of 0.0001 in. As there is no idle time, it is evident that the time per piece will be much less than when the center method is used.

In one case where 0.012 in. stock is removed from pins of $\frac{7}{8}$ in. diameter and 3 in. length, the production rate for finished pieces is 195 per hour. Pins of $1\frac{1}{2}$ in. diameter and 6 in. length have been produced at the rate of 80 finished pieces per hour, where 0.020 in. stock was removed. Dowel pins of $\frac{3}{8}$ in. diameter and $1\frac{1}{4}$ in. length, requiring the removal of 0.010 in. stock, have been finished to limits of 0.0003 in. at the rate of 750 pieces per hour. In all three instances hardening preceded grinding.

An interesting variation of through-feeding methods is shown by Fig. 2, where small discs of $\frac{1}{6}$ in. thickness and $\frac{3}{16}$ in. diameter are being ground to size within 0.0002 in. at the rate of 8500 pieces per hour, the material being high carbon alloy steel. As these pieces are too small to be handled separately, they are loaded into tubes of about 4 ft. length. Then the end of the tube is placed

in contact with the ends of the work guides and the pieces are pushed through by means of a rod at the outer end. In view of the small size of the work, an additional guide is placed over the work as it passes the wheels.

Another variation of the through-feed method is shown in Fig. 3, in which $\frac{3}{4}$ in. square fiber rod is being reduced to $\frac{11}{16}$ in. round with limits of 0.001 in. at the rate of 250 ft. per hour, the blanks being 5 ft. long. This work is done in two passes and the square rod is rotated by a separate motor-driven head, a portion of which is shown in the middle foreground. Both the grinding and feed wheels are beveled at the front end so that the change of shape from square to round is made gradually.

Simple Form of Shoulder Work

A simple form of shoulder work is shown in Fig. 4, which illustrates the finishing of the barrels of mushroom valve tappets. In this operation, the feed or control wheel, is backed off by the lever at the right; the operator then grasps the tappet by the head and places the barrel in the work guide and brings the control wheel into position. As he moves the work into the grinding wheel, the back end of the work is forced against a positive stop which allows the head to just clear. As the control wheel is backed off again, an automatic ejecting device delivers the piece to the front of the machine. With lengths less than the width of the wheel, the production rate varies only with the diameter and the amount of stock to be removed; that is, a piece $3\frac{1}{2}$ in. long can be finished in about the same time as one of 3 in. length.

In order to achieve the fullest concentricity, two cuts

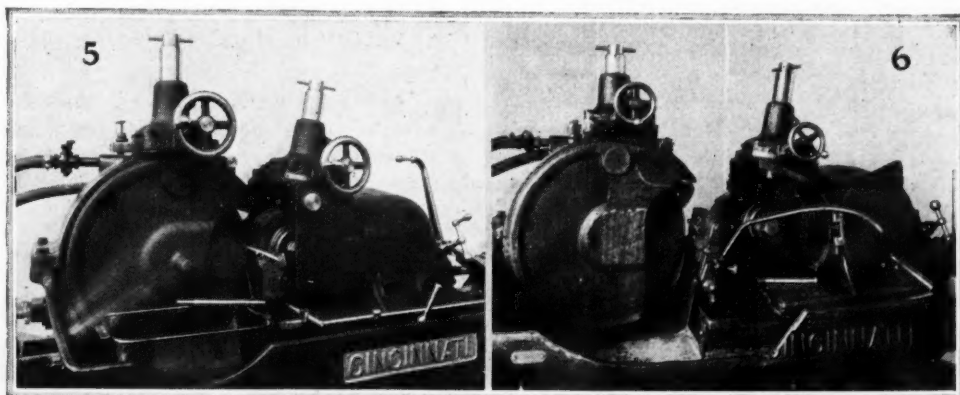


Fig. 5—Grinding two diameters by combination of through-feed and in-feed. Concentricity maintained by two-diameter control wheel

Fig. 6—Grinding oil flats on bolts already ground to size in a centerless machine

Fig. 7—Formed wheel used for grinding ball ends for steering gear

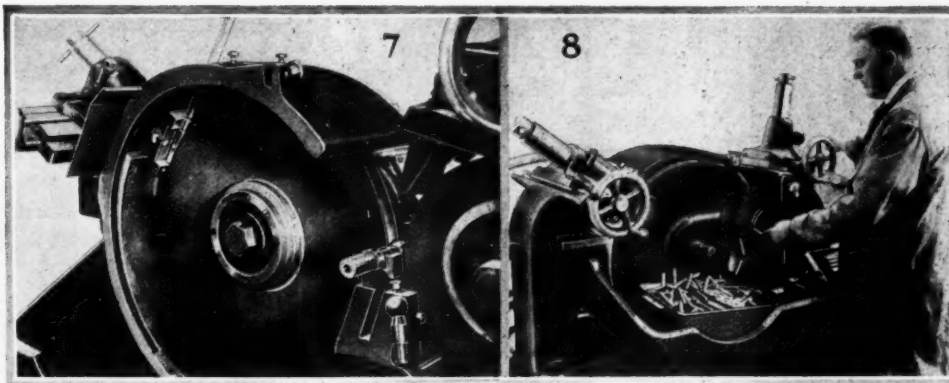


Fig. 8—Unusual formed surfaces produced by formed wheel and in-feed type of operation

are recommended in finishing tappet barrels. With hardened steel as the material and a finish allowance of 0.01 in., tappets having barrels of $\frac{5}{8}$ in. diameter and $2\frac{1}{4}$ to $2\frac{1}{2}$ in. length have been finished to limits of 0.0002 in. at the rate of 375 pieces per hour. In order to eliminate scoring due to the wheel traveling in a constant path around the barrel, an oscillating attachment is placed at the back end of the grinding wheel spindle. When this attachment is thrown in, the grinding wheel travels back and forth through $1/16$ in. instead of rotating in a fixed plane. This action breaks up the circumferential rings on the surface of the work.

Through-feed and in-feed are combined for the production of small armature shafts, as shown in Fig. 5. The large diameter of the shaft is ground first by passing it across the wheels, the limits being held to 0.0005 in. Then one end of the large barrel is supported in the Vee-block, as shown, and the plain shank is ground on one end. In order to insure close limits of concentricity between the two sizes, the regulating wheel is formed to two diameters while the guides are set to bring the finished diameter of the smaller end at the proper plane. The material is soft steel and two cuts are taken on each surface with a total removal of 0.01 in. stock. The production rate is 300 shafts per hour. In this case, the oscillation device is used for the shouldering operation and the location of the shoulder is determined by a positive stop at the back.

Shackle Bolt Work

By means of the device shown in Fig. 6 the possibility of centerless grinding shackle bolts is increased greatly. Practically all shackle bolts are hardened and many are provided with oil flats or grooves on one side. If this flat is machined in the usual way before hardening, the possibility of centerless grinding is eliminated. Therefore, the method has been reversed and the barrel diameter is ground at centerless grinding production rates before forming the flat. Then the flat is ground off of the hardened cylindrical surface in the fixture shown. The fixture is universal and handles all diameters from $\frac{1}{2}$ in. to $1\frac{1}{4}$ in.

The long lever shown at the right closes the fixture and brings the work into the grinding wheel when raised. When swung downward, the work is retracted and the fixture is unloaded. The screw stop shown at the bottom determines the depth to which the flat is ground. As the fixture opens, the bolts drop out to the front of the machine. This arrangement leaves the operator's left hand free to place the parts in the fixture and makes a nicely balanced motion program, with the result that flats can be ground on as many as 900 pieces per hour. This rate varies somewhat with the size of the flat within the width of the wheel, but runs from 10 to 15 pieces per min. Subsequent snagging is eliminated, as no burrs are produced by the grinding operation.

Centerless grinding has simplified the production of

ball ends for steering gears and at the same time has speeded up production and improved the quality of the product. The taper shank is ground first by the usual in-feed method and then the ball is ground to finished size in the set-up shown in Fig. 7. The cylindrical control wheel is retained but the grinding wheel is formed to the contour of the ball by the special wheel-truing device shown at the upper left. By setting the diamond in or out, various radii can be formed in the face of the grinding wheel. The wheel-truing head remains in the same fore and aft position and truing is accomplished by swinging the diamond by the lever shown at the top.

Speed of Wheels Increased

A special bracket, work support blade and end stop are incorporated in the fixture which is located between the wheels. The speed of the wheels is increased for finishing by means of a special cam arrangement which is connected to the lever operating the control wheel head. In order to facilitate loading, knurled sleeves are placed over the small end of the ball stud. One cut is used for the removal of 0.008 in. of stock and the material is hardened steel, the production rate being 360 finished pieces per hour. In the older practice, ball ends are turned and require polishing and the surface is not always truly spherical. The latter operation is eliminated and the sphericity of the ground surface is held to 0.0005 in. limits.

An unusual forming operation is shown in Fig. 8. Fountain barrels which are made of hard rubber tubing are formed in the conventional shape at the rate of 1000 pieces per hour by the in-feed method. The contour of the grinding wheel face is obtained by a special cam which guides the diamond point across the face of the wheel, although this is required but once in two days' operation. Any size or shape within the width of the wheels can be obtained by varying the cam plates. This layout is capable of application to fiber and bakelite parts and, with modifications, to the production of metallic parts. Parts like spindle blades for spinning machinery, which require barrel shanks and long tapers blending into smaller diameters at the ends, have been produced by combinations of the through-feed and in-feed methods.

A NEW rust-proofing process known as the Udylyte has been developed and has found some application in the automobile industry. It consists in providing the parts to be rust-proofed with an electrolytically deposited coating of cadmium 0.0001 in. thick. The coating is so thin that when applied to gear wheels, for instance, it does not make any appreciable difference in the tooth profile. In the production of gears which are given this treatment, after the heat treatment, instead of the usual final oil dip the gears are placed in an electrolytic bath for five minutes and they are then dipped in a tank of hot water to heat them sufficiently so they will dry quickly and not spot.

Piston Rods of Different Designs Machined on Standard Set of Tools

Special fixtures used at Waukesha plant in handling rods for various types of engines. Quick changes of set-up and economical production result. Single runs usually small.

AT the recent meeting of the Cleveland Section of the Society of Automotive Engineers, H. O. Schultz of the Waukesha Motor Co. presented a paper dealing with the connecting-rod practice of his firm.

Mr. Schultz explained that the Waukesha company turned out a complete line of engines, necessitating the use of a number of different connecting-rod designs, and as the run on any particular rod at one time is not very great, frequent changes of set-up are required.

The difficulties resulting from this condition are overcome by the use of standard machines in combination with special fixtures of simple design and permitting of economical production. These fixtures are designed to permit of a quick change in set-up, and in many cases they are arranged to take several different rods. Mr. Schultz described the production of connecting-rods at the Waukesha plant as follows:

After the preliminary inspection of the rough forging the rod is subjected to a deflection test to determine the stiffness of the web. This is accomplished in a special fixture (Fig. 1) by applying a predetermined weight over a section of the web at a point midway between the bosses. The deflections under this weight and at its release are shown by an indicator set directly under the point of the weight contact. These two readings must fall within established limits or the rod is rejected for being too stiff or lacking proper stiffness.

The first machine operation is the straddle-milling of both ends on a Kearney & Trecker plain milling machine. Two index type fixtures (Fig. 2), each holding two rods, are employed and mounted at opposite sides of the cutters, thus permitting the operator to load and index one while the other is in operation. Between loadings the operator has sufficient time to check the faces of one side of a milled rod on a surface plate with bluing, and to remove any high spots with a file, this face being used for all succeeding operations.

Three Fixtures for Boring Ends

The next step is the boring of both ends (Fig. 3) on a 4-spindle Foote-Burt press. Three fixtures are used, one of them being loaded while the others are in the machine. These slide underneath the spindles in a plate provided with ways, and with locking provision at the two operating positions.

Following the boring, both ends are broached on a standard LaPointe machine. The small end is broached to size, while 0.0005 to 0.007 in. stock is left in the big end for grinding. On small type rods having babbitted bearings in the big end, the broaching is omitted altogether and the small end is reamed instead.

The bolt holes are then drilled and reamed on a Natco multiple press. A revolving, five-station fixture (Fig. 4) is employed. The first station spot-drills, the second drills halfway through, the third drills the other half, the fourth reams, while the fifth is the loading station. A special

pipe arrangement carries the cutting solution direct to the work.

Grinding of the big end comes next. This is done on a Bryant grinder employing a fixture (Fig. 5) to center the rod with the revolving spindle. The purpose of grinding is to provide a perfect seat for the liner bushing and thus eliminate any undue resistance to heat flow.

Splitting the rod and cap and milling for the bolt heads is the next operation. Two rods are held in an index type fixture (Fig. 6) and mounted on a Kearney & Trecker milling machine.

The drilling of the liner bearing lock screw holes is done on a high-speed press, using a two-position rocking jig designed to take both rod and cap.

In order to obtain a secure lock the piston pin lock screw hole is drilled and line-reamed to a center distance of 0.001 in. from the piston pin hole. A special reamer piloting at opposite ends of the work is used in a jig provided to properly guide it (Fig. 7).

Bushings Face-Ground

After the liner bushings are assembled to the rod and cap, they are face-ground flush with the faces of the rod and cap. The fixture for this has a half-round mandrel against which the rod or cap is forced by an equalizing clamp, thus holding the liner securely in its seat.

The rod and cap are next assembled and the liner bushing in the big end is rough-reamed and faced. The fixture (Fig. 8) is designed to locate the small end and equalize the large end from the bolt heads. A pilot stud guides the tools and serves as a stop for the facing tool.

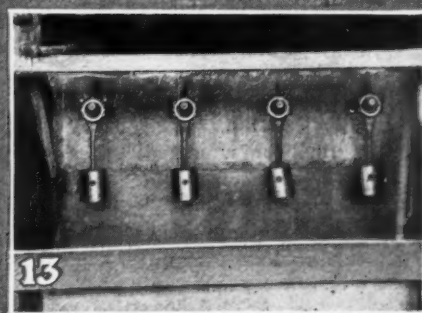
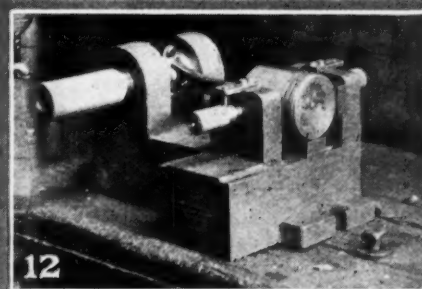
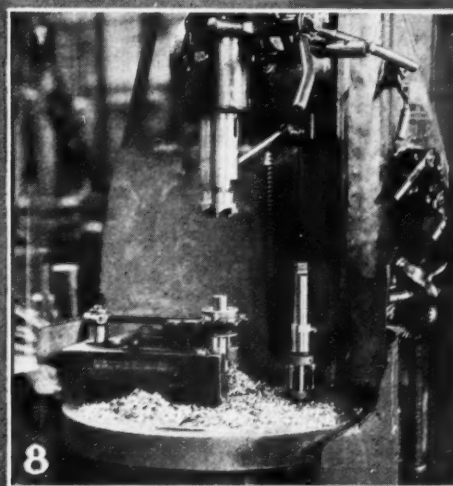
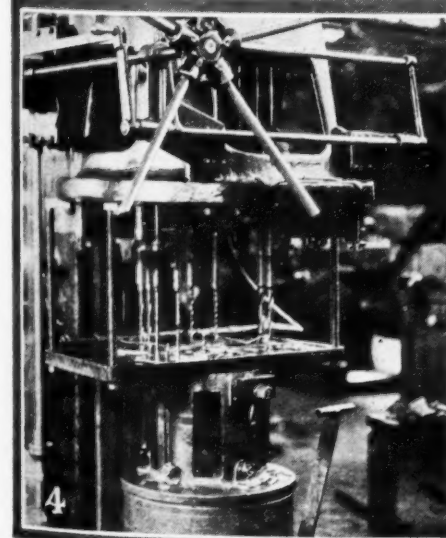
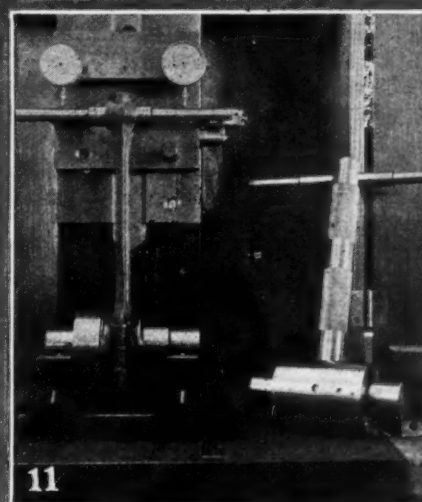
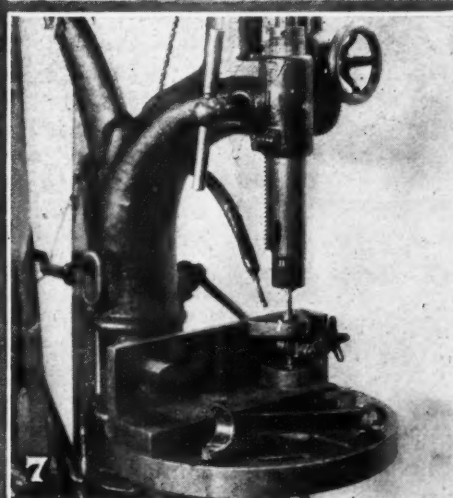
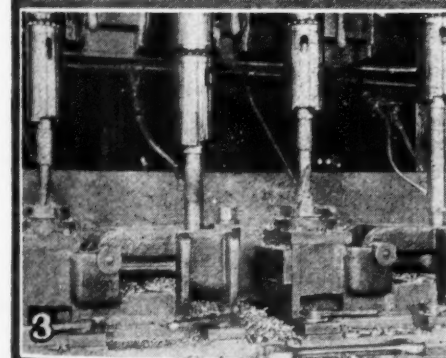
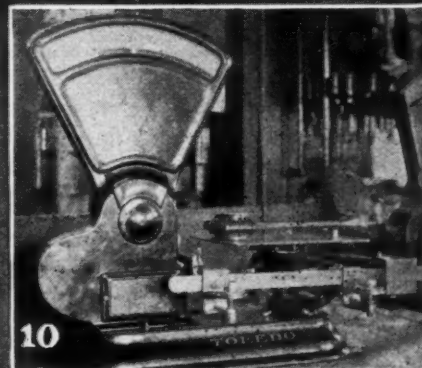
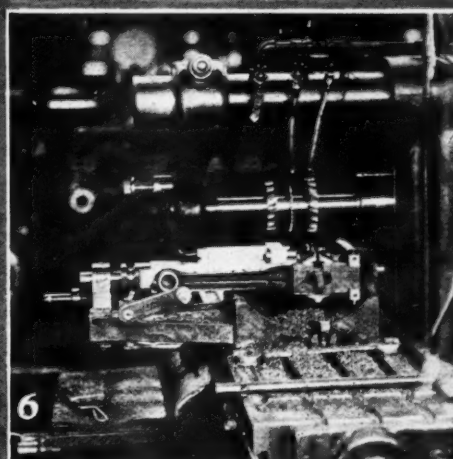
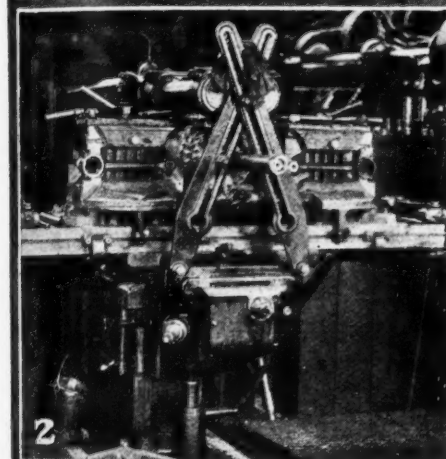
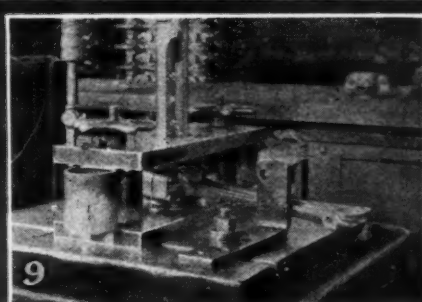
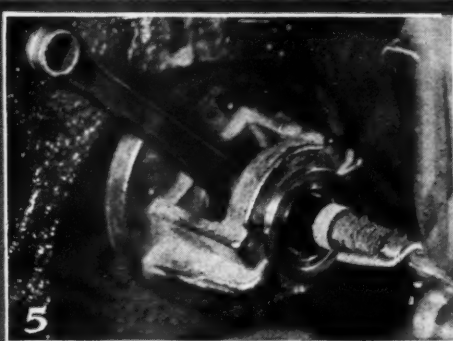
Reaming the large end is the last machine operation, and is done with a special design of single-blade reamer (Fig. 9). The lower end of this reamer is ground to serve as a pilot in the rough-reamed rod, while the main body is ground to the low limit of the rod bearing and the blade protrudes 0.0005 of an inch. This construction produces a combination scraping and burnishing action. The resulting bearing meets all requirements as to finish, roundness and size.

The rods are then weighed on a Toledo scale (Fig. 10) and matched up into sets.

The finished rod is inspected for parallelism and squareness. The fixture (Fig. 11), which is designed to take all rods, is provided with three indicators for a rapid check, these being set to zero with a master set-up gage.

On the assembly floor the rod and piston assembly are given a final check for squareness and parallelism. The fixture for this (Fig. 12) has a plug for the big end of the rod, a straight edge for gaging alongside the piston and low limit plugs for checking from the piston crossbore.

Just before being put into the motor the rod and piston are sprayed with a solution of sodium phosphate and soft soap to remove all grit and grease. A special vat (Fig. 13) was built for this purpose, with provisions to suspend the rods and pump the solution.



1—Fixture for testing rods for lateral stiffness; 2—straddle milling of rods in index type fixture; 3—boring both ends in four-spindle boring machine; 4—drilling bolt holes with the aid of a revolving five-station fixture; 5—grinding out the big end bore; 6—splitting the head and milling for bolt heads; 7—line-

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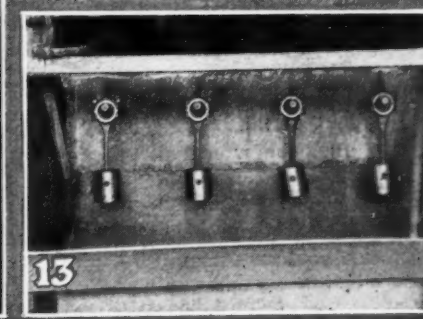
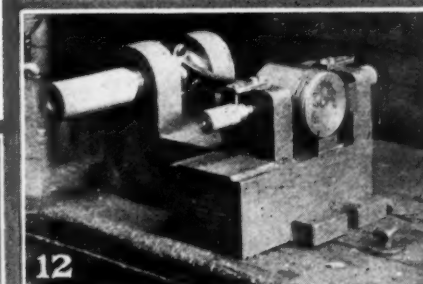
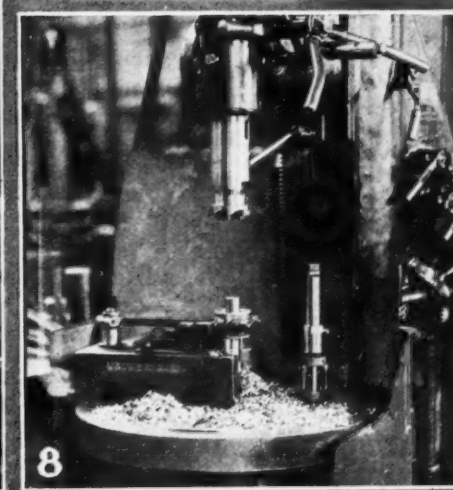
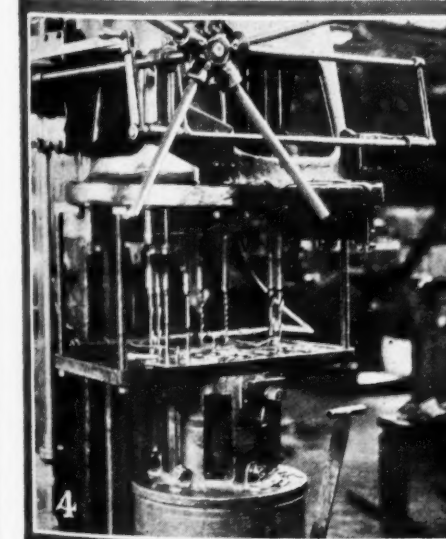
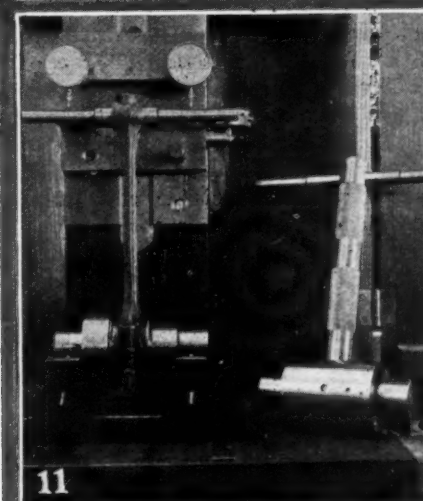
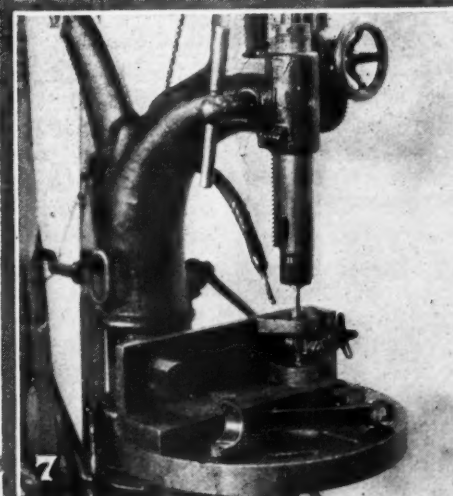
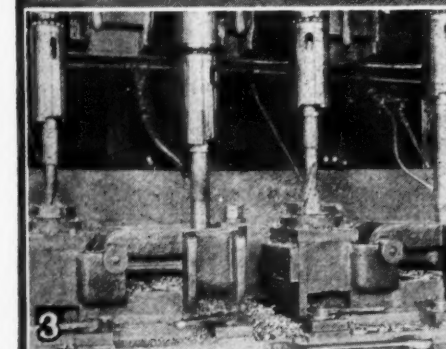
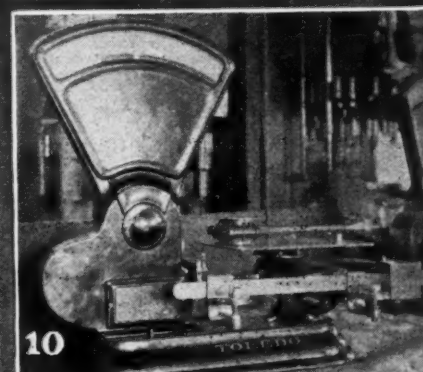
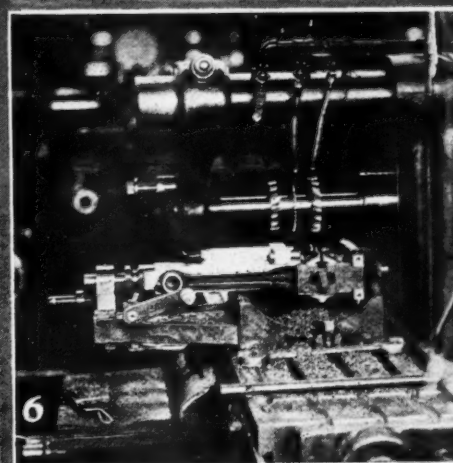
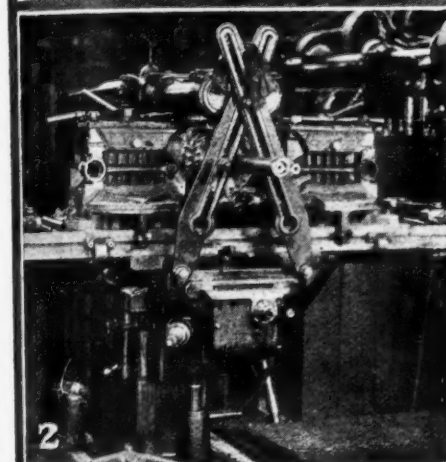
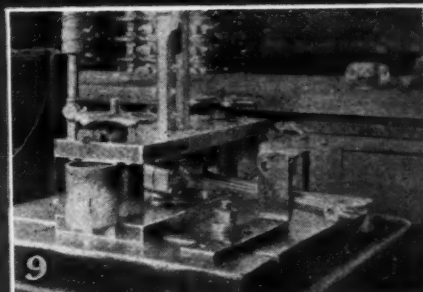
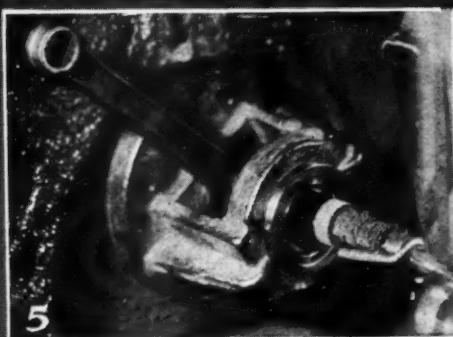
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Bright Outlook for Farm Tractors Seen at Chicago Meeting

Commercial and mechanical aspects discussed at two-day session
held jointly by agricultural society and automotive engineers.
Leading speakers stress need for more efficient research work.

AN undercurrent of optimism for the future of the tractor as used for power farming ran through all the sessions of the National Tractor Meeting which was held in Chicago, April 29 and 30.

The meeting was held jointly by the Society of Agricultural Engineers and the Society of Automotive Engineers and was attended by engineers, designers, state college men and a few practical farmers who have developed unusual methods in the application of power farming.

Not much was said on the subject in formal discussions, but it seemed to be the general feeling among those present that long-swing tractor production eventually will narrow down to comparatively few companies, most of which also will be producers of other lines of farm implements.

H. P. Walker, president of Kansas Agricultural College as well as of the Society of Agricultural Engineers, spoke informally at the meeting of Wednesday morning on the necessity for greater cooperation in research work between the various state land grant institutions and the tractor and equipment manufacturers. Needless duplica-

DESPITE years of development and research, said one of the speakers at the National Tractor Meeting in Chicago, the present tractor still falls short of being a true agricultural tractor.

Only 50 per cent of the farmer's work which might well come within the range of such a machine can be done with the present design and the greatest shortcoming is in row crop work. Cultivating and similar operations demand an advance beyond present practice.

Hence the need for continued and increased cooperation along research lines between the agriculturalists and the tractor manufacturers.

tion of effort exists at present, he said, whereas cooperation in connection with specialized effort at various points will hasten the solution of problems which have been hanging over the farmer and the manufacturer since the idea of power farming first gained foothold.

In addition to a paper, "Research on Tractor Engines," which was presented during the afternoon of the second day, H. L. Horning, president of the Society of Automotive Engineers, also president of the Waukesha Motor Co., discussed the need for diversification on the part of the tractor manufacturer. He insists that as long as the

tractor manufacturer ties his fortunes solely to those of the farmer, he is going to be in a most precarious position and subject to frequent violent fluctuations.

The description of the equipment which has been developed at the State University of Iowa for testing tractor wheel equipment opened the first session, at which A. W. Wirt presided, and precipitated a discussion that crystallized into a choice of concave spade lugs and angle iron cleats, depending upon soil conditions, although about 57 varieties of wheel equipment are required to meet all of the conditions encountered.

Dynamometer Apparatus Described

Due to the enforced absence of M. L. Nichols of Alabama Polytechnic Institute, who was to have presented a paper on the "Relation of Soil Dynamics to the Problem of Tractor Lugs," Professors J. B. Davidson and E. V. Collins of Iowa State filled the breach with a description of their specialized wheel equipment dynamometer apparatus, the presentation being made by the latter.

The wheel and the lug equipment to be tested is mounted in a frame which is hinged on the rear end of a Heider tractor equipped with an auxiliary gear box for the transmission of rotation to the test wheel through intermediate shaft and chains. A regular Iowa recording dynamometer measures the output of the test wheel, while the input is determined by a steam pressure indicator which is interconnected with a hydraulic cylinder and piston arrangement between the driving axle and the hub of the test wheel. Both of these records are made on the same chart, which also indicates time and distance factors. Change gears are used to develop an excess speed at the test wheel in order to develop the desired slippage factors.

Ordinarily the tractor direction is reversed so that the test wheels and lugs tend to pull the tractor. The framework has platforms on which pig iron is loaded to effect the desired variations in weight. To test the bearing value of a wheel on track tread under different loading and soil conditions, the direction is reversed and no lug equipment is used. Wheels up to 60-in. diameter and of any reasonable width can be tested with this apparatus. As the apparatus has been completed very recently but little data is available as yet, although general impressions concerning the value of spade lugs and angle cleats have been verified.

In discussion of this work, Prof. Oscar W. Sjogren of the University of Nebraska recounted some of the high spots brought over a period of years by the Nebraska tests. These were presented as guide posts for future research rather than positive conclusions, serving as indications of existing practice which show the need for clarification of fundamental principles. Regarding weight, tractors of approximately 4500 lb. which ordinarily are in the 10-20 class have the highest tractive efficiency and the

least slippage. In this class the average weight per draw bar hp. ranges from 250 to 350 lb. The weight per in. width of the drivers in this class is approximately 250 lbs. On the brake, the fuel consumption varies from 0.6 to 1.4 lb. per hp. hr. On the draw bar, the fuel consumption varies all the way from 0.89 to 2.75 lbs. per hp. hr.

In spite of the general improvements in engine design and performance, only small gains have been made in drawbar performance. This is a clear indication of the need for transmission improvements. In 1920, 55 engines had governors which varied speed more than 10 per cent between no-load and the full-load conditions, while in 1924, only two instances of this variation were found. Governors have been improved greatly and in some instances now the variation is as low as one per cent. Air cleaners have been the subject of tremendous improvement largely as the result of the California tests.

Still Room for Improvement

Despite years of development and research, the present tractor still falls far short of being a true agricultural tractor. Only 50 per cent of the farmer's work can be done with the present design and the greatest shortcoming is in row crop work. Cultivating and similar operations demand an advance beyond present practice. Belt speeds continue to vary widely although the tendency is toward higher velocities.

Manufacturers, engineers and agricultural college men participated in the discussion which was featured by the plea for more reasonable publicity for power farming research work by A. P. Yerkes. A recent questionnaire has demonstrated that the tractor is far in the lead on the list of anticipated purchases by farmers and that power farming is here to stay and is a great factor in farm prosperity. Demonstrations at State fairs and similar places by State universities and manufacturers' representatives will go far to increase the farmer's knowledge of how to operate his equipment to the best advantage. Knowledge of this sort is bound to be followed by still greater demand for power farming equipment.

Otto Phillip, who is in this country on an agricultural commission from Germany, spoke briefly in commendation of American power farming methods and inferred that the broader adoption of these methods in his country will hasten its rehabilitation.

Paper on Power Take-off

F. N. G. Kranich, of the Timken Roller Bearing Co., reviewed the application of power to the equipment back to the tractor in his paper, "The Power Take-off for Tractors" and outlined the present day developments in this direction. The combined harvester represented the first application of power to the equipment which the tractor pulled and this was followed by the installation of engines of 3-10 hp. on grain binders. Following this is the present tendency to conduct power to the equipment by means of an intermediate universal shaft.

At present, two schools of thought are represented, those who prefer to drive the equipment in relation to the tractor engine speed and those who drive in relation to the traveling speed of the tractor. Each idea has advantages and the subject is still too nebulous to allow a final choice. In either case the implement or that part of it which is power driven should be speeded above the tractor speed. The location and form of the power take-off on the tractor also is an open question although a central position back of the axle indicates the best possibilities, due to elimination of extreme telescopic action for turns in either direction and the absence of interference with the drive wheels. Standardization of the take-off shaft end is desirable be-

fore several different forms appear to complicate the problems of the farmer and implement builders.

The need for standardization of belt velocities was emphasized by L. H. Letz in his paper, "Universal Belt Speed for Tractors." This speed has been increasing constantly since the days of the steam tractor and the implement builder is completely in the air today as the tractors listed show variations ranging between 1900 and 4100 f.p.m., making it almost impossible to ship pulley equip-

THE opinion prevails that farm tractor production eventually will narrow down to comparatively few companies, most of which also will be producers of other lines of farm implements.

H. L. Horning, president of the Society of Automotive Engineers, helped to confirm this belief at the Chicago Tractor Meeting by stating that the tractor industry never can be self-supporting, but must be accompanied by other lines.

Mr. Horning's own company, which formerly did 50 per cent of its total business in the tractor field, is now out of that picture entirely and is spreading its production over 35 diversified industrial lines.

ment which will allow the machine to function as intended by the design. While most of the manufacturers of belt-driven equipment favor a speed of about 2600 f.p.m., they are inclined to accept any reasonable figure providing it is accepted and maintained as a standard. Many of the tractor manufacturers prefer speeds above this figure in order to decrease the size of the belt and the imposed loads. Equipment manufacturers are not concerned as much by the actual speed as the need for adopting some speed as a standard. This paper was followed by a report of the belting committee, the gist of which was in accord with the standards adopted by the Standards committee of the S. A. E. An exception was made in the case of a 9-in. 5-ply belt, the length being reduced to 150 ft. as this is the figure which is in common use.

In the absence of L. B. Sperry, who was to have presented a paper on the effect of tractor engine development on the related automotive fields, the first portion of the meeting on Thursday morning was turned over to three engineers for impromptu discussion of similar topics. L. F. Berger of the International Harvester Co. reviewed ignition developments. Geo. W. Iverson of the Advance Rumely Co., Inc., described the oil cooling system which is used on that make of tractor, explaining the advantages for cold weather operation and the favorable effect on cylinder wall temperature in conjunction with the use of kerosene as fuel. H. F. Bryan reviewed carbureter and hot spot manifold development.

New Production Methods

In relation to the development of production methods, Max Sklofsky of the John Deere Co. spoke briefly on the high spots of his paper entitled "Recent Developments in Production Methods and Equipment." He traced the shop practice in parallel with the successive changes in the general type of tractor construction from the 20,000-35,000 lb. giant of 15 years ago down to the light unit construction of today. While the amount of machinery and the number of machine operations have increased

tremendously, the number of labor hrs. per tractor has been reduced appreciably. However, development of shop methods has not reached zenith as in the majority of cases studies indicate that 90 per cent of the labor is devoted to handling and but 10 per cent to actual direct process. These figures apply to the machine shop; in the foundry the handling percentage is 96.

Line production is applicable to moderate and small production but common sense must be used in the selection of conveyor equipment. The simpler, the better, as in most cases the initial installation is only the beginning and will be subject to changes from practically the first moment of operation. In the shop which is arranged to the best advantage, little or no conveyor equipment should be required in the machine department as machines should be placed so that parts are passed from one operation to the next. The use of chutes is a simple solution as these can be made from comparatively cheap structural steel or wood and do not represent a top-heavy investment. Furthermore, they are readily susceptible to change.

Kerosene as a Fuel

Mr. Horning's paper, "Research on Tractor Engines," opened on the subject of kerosene as a fuel and his viewpoint is summed up a quotation from a letter written him by Harry Ricardo. "I have fooled around with the distilling liquid for a hundred years and finally have decided that kerosene is no fuel." Economic influences should incline the designer toward gasoline as fuel as statistics indicate that the long swing tendency in the price of gasoline is downward while that of kerosene is upward. Horning insists that there is no economy in kerosene fuel when its price is within seven cents of gasoline, when maintenance and the cost of operation is considered.

Along with his anathema of kerosene, Horning took a fall out of tractor engineers, criticizing their sloppy methods of design and research and stated that while tractor companies had laboratories they had no research. Furthermore he feels that the tractor industry never can be self-supporting but must accompany other lines and ride on the peaks of the prosperity curve. His own company, which formerly did 50 per cent of its total business in the tractor field, is out of that picture entirely and now is reaching more than 35 diversified industrial lines. He feels that the lesson is obvious.

The farmer is the greatest gambler and the greatest optimist in the world, said Mr. Horning. In no other line of business effort will a man stake his pile on a year's sunshine, wind and rain and a manipulated market. The manufacturer who is banking on business from this source will require sublime faith and an unlimited bankroll.

The Lubrication Problem

He discussed the lubrication problem, which is vitally related to the fuel question. Here he interpolated the statement that while farmers buy kerosene tractors, they run them on gasoline and if it were not for the psychology of a few cents difference in price, the designer would prefer the gasoline job. Some means must be devised for top end lubrication. At present, the piston and rings are lubricated by splash from the throws of the crankshaft. A drop of oil is deposited on the lower end of the bore and starts its way upward. Every inch of the distance to the top sees further deterioration until when the top ring is reached nothing but a petroleum mud is left. It is only divine Providence which made cast iron with graphitic content that allows any present day engine to get away with the time-honored means of lubrication.

Pressure lubrication of the bearings in the crankcase is most desirable if not wholly essential, but along with this

should go a special lubrication of the top end. Some devices have been placed on the market for this purpose. His company has developed a method of feeding oil to the two upper rings as they are at the lowest point and are unable to determine any perceptible wear at these rings after considerable service. Lubrication of any surface in the engine or any other piece of machinery can not be left to accident or providence. The problem is to get good clean oil to the bearing and thereby keep the metallic surfaces apart. As long as these are separated no wear will take place. Rigidity of structure is an important part of the lubrication program as it is by this means that parts are maintained in their intended relationships.

Predicts Cheaper Gasoline

No charm exists in the 1000 r.p.m. figure which is the criterion of many tractor engine designers. Speeds far in excess of this figure are possible if the fuel is utilized to the best advantage, if lubrication is adequate to keep metallic surfaces apart and if parts are sufficiently rigid to maintain proper relationship. Within five years Mr. Horning predicts that gasoline will be the outstanding fuel at a price about half of the present cost. Due to better lubrication methods the life of working surfaces will be increased from 5 to 15 times.

As well may be imagined, this paper brought forth a storm from the manufacturers of kerosene tractors. However, Horning stated that he held no brief against engines which were designed for kerosene operation and commended the two cylinder horizontal units for their effective operation.

M. L. McCray of the John Deere Co. cited the fact that his company was testing engines satisfactorily on 38 deg. Baume distillate and that he attributed much of the excellent operation of this unit to the two-cylinder horizontal construction, which simplifies both distribution and oiling problems. Also he averred that a liberal amount of oil passes the rings in this style of engine and this feature prevents excessive ring wear. In the case of the Rumely tractor, oil cooling was advanced as the means for maintenance of high temperatures in the cylinder walls with consequent good vaporization.

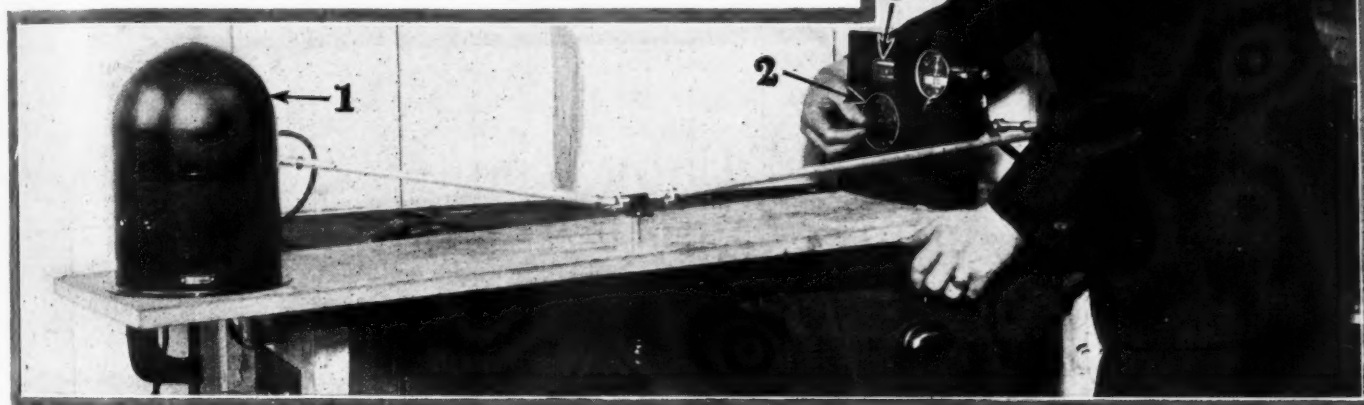
Design of Coil Springs

E. W. Stewart of the Wm. D. Gibson Spring Co. presented a paper on "Calculation and Design of Coil Springs." While this paper was too mathematical to be digested here, the theory and practice of spring calculation was covered in a most complete manner and the full paper may well serve as an adjunct to any designer's handbook. According to Mr. Stewart some of the spring data given in present day handbooks is erroneous. He traced the development of simple formulae for round and square wire based on torsional characteristics and the deformation caused by forming the spring. By eliminating slight stresses of different nature, these formulae are reduced to comparative simplicity. He recommended barreltype and conical springs for valve stem applications, provided the pitch of each coil is adjusted to its mean diameter in order to prevent excessive loading of the smaller coils. Mr. Stewart also described a spring which had been made of cast iron which is stiffer at 1200 deg. Fahr., the working temperature, than at atmospheric heat.

Movies of the Fordson, Holt, Rumely, Case and International Harvester tractors were shown during the course of the meeting, a special session being provided for this purpose on Wednesday night. Every phase of the tractor's usefulness in agricultural and industrial pursuits was shown, in addition to views of the manufacturing operations.

New Compass Makes Flying Safer

Earth Inductor developed by M. M. Titterington is improvement over previous models. Direction can be maintained easily under all conditions. Apparatus consists of three units.



1. Generator of Pioneer Earth Inductor Compass. 2. Controller. 3. Indicator. Morris M. Titterington, the inventor, is shown in his laboratory testing the new device.

ENABLING naval, military and commercial aircraft to fly on a straight course through fog and darkness or over long stretches of ocean or uncharted territory with the assurance of reaching the objective, the latest model of the "Pioneer" Earth Inductor Compass, invented and manufactured by Morris M. Titterington of Brooklyn, New York, has been put into quantity production.

The entire apparatus, which weighs only a few pounds, consists of three major units known as the generator (compass), controller and indicator. The first is usually located in the rear of the fuselage where it cannot be affected by the magnetism of the motor or similar metallic bulk. The other two units are located on the instrument board in the cockpit within easy reach of the pilot.

In steering a compass course, the pilot simply "sets" the controller, in which a compass card is connected to a small crank, to indicate the predetermined course he wishes to fly. When the airplane is under way and headed for approximately the direction desired, the electric needle pointer in the indicator will be seen on one side or the other of the zero mark showing which way to turn the ship in order to bring it back on the course.

In this type of compass, the pilot does not have to keep two points in line on a movable card as in the floating type, but has to see that the meter hand is on the zero sign in the middle of the indicator instrument. In the older model it is possible for the airplane to deviate several degrees from its course by the time the compass card has returned to its normal position after a period of "swinging," and the plane likewise will have traveled several miles out of its way.

The slightest turn or movement is instantly shown by the meter hand on the new type and enables the pilot to

correct his course immediately.

The generator, which is the most important unit and determines the direction of the earth's magnetic field, has an electric generator armature which is stabilized by a gyroscope so as to cause the compass indications to be quite steady, the rolling and pitching movement of the ship therefore not affecting it. The armature, which has no field magnets, uses the earth's magnetism as a field and generates electricity which operates the needle in the indicator. The generator armature is driven by a small electric motor which draws current from the storage battery carried on practically every type of aircraft for operating the ignition system, radio and running lights. It draws approximately three to four amperes. A remarkable feature of this unit is that the electric motor which is connected to and within a few inches of the compass generator does not cause any errors.

The controller, which is operated by a small hand crank and carries a vernier adjustment compass card, is connected through a series of gears, shafts and universal joints to the generator. When the crank is turned it rotates the brushes connected to the generator armature so that the lines of force of the earth's magnetism will be cut at a certain angle.

The indicator carries a small sensitive electric needle whose pointer is normally on the zero mark in the center of the horizontal scale and is operated from current supplied by the generator.

"Pioneer" Earth Inductor Compasses of an earlier type were used by the World Flyers and were credited with saving the aviators from disaster at least three times when they were lost in fog banks. They were also employed in the lighter-than-air "Shenandoah" on its transcontinental trip.



The new
De Havilland
"Moth" biplane
in flight.

De Havilland Builds "Baby Plane," Two-Seater, Weighing Only 770 Pounds

*Capable of 90 m.p.h. with fuel consumption of 20 miles to gallon.
Wings fold back to allow housing in ordinary automobile garage.*

By Leslie S. Gillette

WITH a 90 m.p.h. top speed and fuel consumption of 20 miles per gal., a small two-seater biplane known as the "Moth" (DH-60) has been produced by the De Havilland Aircraft Co., England, where the "light" type of airplane has received closest attention.

An air-cooled 60 hp. four-in-line "Cirrus" A. D. C. engine was specially built for this machine by the Aircraft Disposal Co., and it is interesting to note that within three months of commencing the designs of both plane and engine the DH "Moth" had been tested successfully in the air.

The "Moth" was designed to provide flying clubs and schools now in process of formation and private owner-pilots with a low priced, low upkeep airplane wherein simplicity, reliability, sturdiness, ease of maintenance and handling were the predominating and logical factors. In the air, the "Moth" is not a delicate, sensitive craft requiring a highly skilled pilot, but is steady and easy to fly, being devoid of any peculiarities of behavior, it is stated.

Strictly speaking, the latest De Havilland product is not a true "light" airplane, although it is considerably smaller than the normal type of plane designed to carry two people.

The using in small planes of high speed engines developing in the neighborhood of 20 hp. has been abandoned in favor of a low compression engine of more ample proportions, making for greater reliability and longer life.

Design Follows Usual Practice

The design of the plane follows usual practice throughout, being, in fact, a smaller edition of the regular De Havilland service machine. The fuselage, which is of wood construction and covered with three ply, provides adequate space for the carrying of light luggage, approximately 60 lb., in compartments adjacent to the spacious pilot's and passenger's cockpits, which are placed in tan-

dem fashion. The latter are of sufficient size to insure comfort for the largest persons and are fitted with adjustable dual controls.

Specially designed windshields protect the crew from the slipstream of the propeller, while a fireproof bulkhead placed between the engine section and the remainder of the fuselage assists in eliminating the fire hazard. Communication between the pilot and passenger is improved by the fitting of a speaking tube.

Folding Wings Novel Feature

The most noteworthy feature of the machine lies in the ease and speed with which the wings can be folded so as to facilitate transport and eliminate the necessity of a large hangar. The wings when folded backward parallel to the fuselage give the machine a total overall width of 9 ft. 8 in., making it a simple matter to store the plane in a garage or to tow it along roads behind an automobile. The operations of folding or spreading the wings can be performed by one man in less than three minutes and when they are swung into position for flight no truing up or adjustment is necessary. A small detachable spreader strut relieves strain at the root of the front main spars when the wings are folded.

The wings are of the usual wooden type covered with fabric. To afford maximum control at low speeds, the rudder and elevators, as well as the ailerons, which are fitted on the lower wings only, are of generous proportions, while to make frequent renewals of the control wires unnecessary all cables have been carried straight through. The undercarriage, which is of the "rubber-in-compression" type, is built up of steel tubing and made exceptionally robust to prevent damage in event of landings on rough ground.

Sufficient fuel for 3½ hours' flight is carried in an aerofoil-shaped tank holding 15 gals. and forming the

center section of the upper plane, which allows plenty of "head" for the gravity feed. The tank itself is divided into main and reserve compartments, the latter holding sufficient fuel for a half hour's flight. The cock controlling the fuel feed is operated by a long rod extending down to within easy reach of the pilot while flying. The provision of a starting lever in conjunction with an impulse magnet enables the pilot to start the engine from his seat without assistance.

The stalling speed of the "Moth" with full load, pilot, passenger and luggage is 40 m.p.h., while the normal cruising speed at 80 per cent full engine power is 81 m.p.h. The distance required for the "take-off" and "landing" is extremely short and on the ground the machine can be maneuvered by the pilot unaided. The weight of the machine empty is 770 lb.

The general specifications and performance figures are as follows:

Span	29 ft. 0 in.
Length	23 ft. 5½ in.
Width (wings folded)	9 ft. 8 in.
Height	8 ft. 7 in.
Chord	4 ft. 3 in.
Gap	4 ft. 10 in.
Track	4 ft. 4 in.
Dihedral	3½ deg.
Ground angle	11¼ deg.
Full speed	91 m.p.h.
Cruising speed	81 m.p.h.
Stalling speed	40 m.p.h.
Climb (one minute)	430 ft.
Ceiling	13,000 ft.
Weight empty	770 lb.
Useful load	190 lb.
Maximum fully loaded weight	1350 lb.

Built from Airdisco Engine

In order to cut the cost of the "Moth" plane to a minimum and at the same time produce a sturdy, reliable powerplant, the "Cirrus" engine was produced from parts employed in the 120 hp. Airdisco engines which were originally the old 80 hp. French Renaults of war training ship fame. The new engine is virtually a complete half of the 120 hp. Airdisco, being air cooled and having four-cylinders-in-line with a bore and stroke of 105 mm. x 130 mm. It is rated at 60 hp. at 1800 r.p.m., with a maximum of 65 hp. at 2000 r.p.m.

Other than a special crankcase, connecting rods, cylinder heads and a few minor items, the parts are the same as used in the 120 hp. model. As the loads on the crankshaft and bearings will be considerably less in the four-cylinder model, the factors of safety should be more than ample, insuring greater reliability.

The shaft itself, which is coupled direct with the pro-

peller boss, is carried in five bearings, the front and rear bearings being of the ball type and the three intermediate ones of the plain type. The bottom half of the crankcase, which forms a large sump, has the oil pump built into it at the lowest point and from there delivers oil under pressure to the main bearings, while the gears, pistons and camshaft are lubricated by splash and mist. The interchangeable aluminum alloy cylinder heads carry two valves each, the latter being operated by push rods and rockers from the camshaft in the crankcase.

Ratchet Type Starter

The starting arrangement is of the ratchet type and similar in principle to the kick starter of a motorcycle, only it is operated by a hand lever. The weight of the engine dry is 260 lb., or 4.33 lb. per hp. While this weight is admittedly somewhat heavy, it is estimated that at least 100 lb. of weight can be eliminated when the engine is put into quantity production. Following are the engine specifications:

Bore	105 mm.
Stroke	130 mm.
Piston displacement	4500 mm.
Gasoline consumption	0.68 pt. per hp. hr.
Oil consumption	0.033 pt. per hp. hr.
Weight	260 lb.
Weight per hp.	4.33 lb.
Rating	{ 60 hp. at 1800 r.p.m. 65 hp. at 2000 r.p.m.
Length	39.3 in.
Width	18.0 in.
Height	36.3 in.



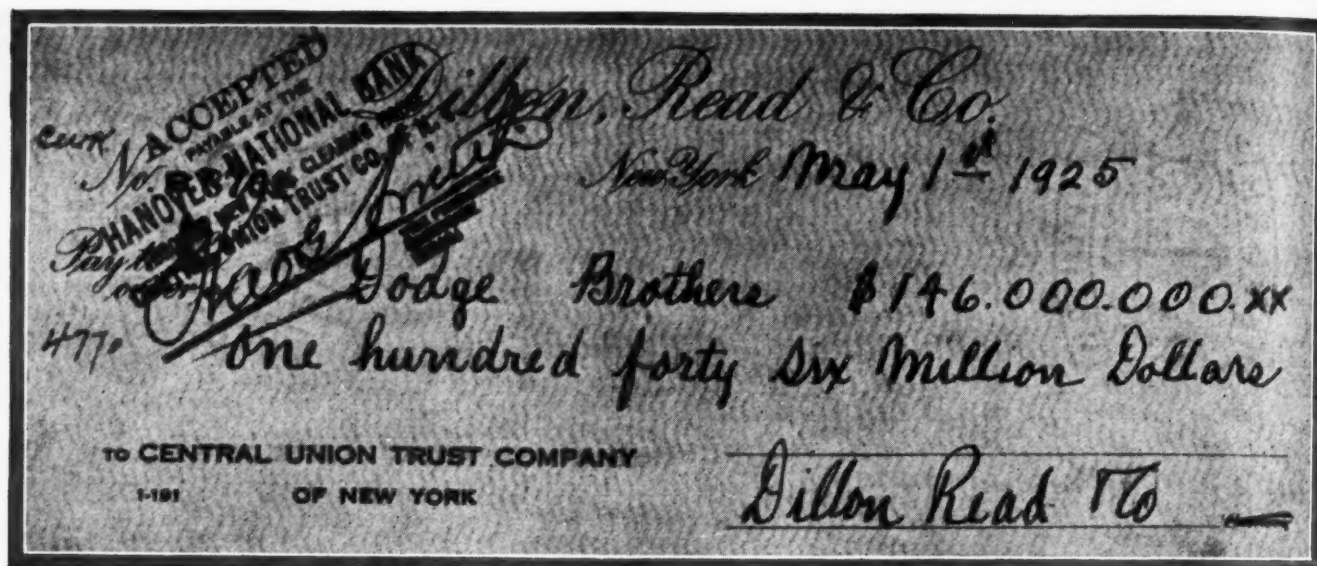
In the picture above the right wing of the "Moth" biplane is being brought forward into the flying position. The picture at the left shows the wings completely folded and the plane arranged for towing by automobile.



CERTAIN manufacturers of starting batteries are said to object to the present standard rating for such batteries which are based on the discharge capacity at 5 hr. and at 20 min. and to favor a return to the old rating based on a 5-amp. discharge rate.

There are certain technical objections to rating batteries in this manner, and the Storage Battery Division of the S. A. E. Standards Committee, at a meeting recently held in New York, requested a representative of the Bureau of Standards to prepare a statement of the case, with particular reference to the technical objections to rating storage batteries on the so-called current basis. This statement has been prepared and submitted to members of the Storage Battery Division for criticism, and when finally approved by them is to be circulated throughout the battery and automotive industry.

The \$146,000,000 Check That Bought Dodge



THE above is a facsimile of the \$146,000,000 check with which Clarence Dillon, of the New York firm of Dillon, Read & Co., on the morning of May 1st, closed the deal for the purchase of the Dodge automobile properties. The check is the largest ever drawn in an industrial transaction of this kind.

The scene of the formal closing of the deal, which was followed with the greatest interest in automotive circles, was an office on the fourth floor of the Central Union Trust Company at 80 Broadway, New York. The hour was 10.45 a. m. Mr. Dillon entered the room carrying a small file envelope in which were several legal documents and the historic check, the latter in Mr. Dillon's own handwriting. Without ceremony or flourishes, Mr. Dillon untied the strings around the envelope and brought out the check.

The others in the room drew around the table. The central figures in the scene, in addition to Mr. Dillon, were: Charles P. Spicer, vice-president of the Detroit Trust Co.; Theodore G. Smith, vice-president of the Central Union Trust Co.; Arthur A. Ballantine, of counsel for Dillon, Read & Co., and Maurice H. Ewer, vice-president of the National Park Bank.

Simultaneous with the meeting in New York there was

a meeting in the office of the Detroit Trust Company in Detroit. Attending that meeting were S. W. Howland, of counsel for Dillon, Read & Co.; A. M. Barnes, a firm member of Dillon, Read & Co.; Arthur T. Waterfall, vice-president, and John B. Ballantyne, treasurer, of the old company known as Dodge Brothers, and H. V. Popeny, secretary of the former owners of the property.

A long distance telephone wire connected the offices in which these meetings were held. The closing of the deal was as follows:

Mr. Howland in Detroit addressed Mr. Ballantine, his law partner in New York, saying "Everything is ready." Then Mr. Spicer in New York addressed John B. Ballantyne in Detroit saying "I have the check." This was given to him by Mr. Dillon the moment his lawyer notified him that everything was in readiness in Detroit. And as soon as Mr. Spicer had passed the word back to Detroit that he had the check the deed to the property was turned over in the Detroit office to Mr. Barnes of Dillon, Read & Co.

The entire transaction required not more than 5 minutes for its fulfillment. The check was deposited immediately in the Hanover National Bank, New York, to the account of Dodge Brothers.

Some Special Features in Next Week's Issue

READERS of "Automotive Industries" will find in next week's issue a complete story of the proceedings of the annual convention of the American Gear Manufacturers Association in Pittsburgh, May 6-9. Among the subjects scheduled for discussion at the convention are several of direct interest to automobile builders and engineers.

In this issue there will also be an article on "Delivered Car Prices," taking up the question of how far the dealer should be allowed

to go in fixing prices at the point of delivery to the public and inquiring particularly into the matter of "handling charges."

A description of Chevrolet's system of keeping tab of retail sales and maintaining constant contact with the work of each individual dealer and salesman in the field, and the second installment of A. Ludlow Clayden's article on Engine Lubrication are among other features in the May 14th number.

EDITORIAL

Researches Magnificent

WHAT a wonderful world it would be if everybody were honest and intelligent! Think of all the overhead that might be cut out! Police departments, armies, navies, inspectors, supervisors and a great multitude of whatnots could be dispensed with.

In the single field of research a vast amount of time and money would be saved. Everybody admits that manufacturing can't be carried on successfully today without merchandising research as a guide to marketing. The idea has taken hold of American business with a vengeance. The only difficulty is that nobody trusts the results of anybody else's researches. Consequently a lot of separate agencies often go over the same ground.

Then a lot of good researches get side tracked into a file before any real use is made of them, while more than one painstakingly compiled survey has been junked because it didn't agree with the low-down the president got in the smoking car coming home on the *Detroit* the night before.

But it isn't such a bad world after all and although we aren't 91 years old yet, we are inclined to agree with Chauncey Depew that some improvement is taking place every year. The rate of improvement would be accelerated if everyone would utilize fully the honesty and intelligence which already is in him.

That New German Alcohol

QUITE a stir has been caused in commercial circles here by a sudden jump in the imports into this country of a German synthetic product known as methanol, and by the comments thereon by Secretary of Commerce Hoover. Methanol is nothing more than methyl alcohol (commonly known as wood alcohol) produced synthetically from coal and water.

What makes the subject of particular interest to the automotive industry is that this synthetic alcohol is a result of the researches carried on in Germany during the war to find a substitute motor fuel.

The starting point in the synthetic production of these liquids is not coal but water gas, which itself is manufactured from coal and water. Water gas consists of carbon monoxide, carbon dioxide, nitrogen, methane and hydrogen, all of which are in the gaseous state at normal atmospheric temperatures and pressures. By subjecting this gas, while in the presence of an alkaline carbonate and of a metallic catalyst, to pressures of more than a hundred atmospheres and temperatures approaching a thousand degrees F., chemical reactions are caused to take place by which organic acids, alcohols and paraffin hydrocarbons are formed. From this the methyl alcohol is evidently separated out by distillation or some similar process.

Wood alcohol in its chemical composition is closely

related to methane, one of the constituents of water gas and the first member of the paraffin series of hydrocarbons (of which our motor fuel is largely made up). The methane molecule consists of one carbon atom combined with four hydrogen atoms. If, of the four hydrogen atoms in the methane molecule, we could remove one and replace it by a hydrate radicle, composed of one hydrogen and one oxygen atom, which radicle is chemically the equivalent of the hydrogen atom, we would have a molecule of methyl alcohol. Considered from the molecular standpoint the process, therefore, is a very simple one, but from the fact that it necessitates the use of pressures of more than a thousand atmospheres and of enormous temperatures, it can readily be imagined that it involves great technical difficulties.

Commercial conditions naturally influence the lines of application of scientific discoveries, and in this case the fact that alcohol still commands a higher price when sold for industrial purposes than it would be worth as motor fuel, seems to have made it advisable to split up the synthol, the original liquid product of the catalytic process, into its components, or at least to separate out those components which are of particular value in industrial processes.

Sales and Comforts

THE Business Research Department of the University of Nebraska is making a study of automobile financing. They have just written us asking, among other things, "Just what factor or influence incited the automobile manufacturers to accept the installment principle so unreservedly as they apparently did and have?"

Probably no single occurrence or factor was responsible for use of the time payment system by the automotive industry. It grew into the business in the natural course of economic trends. Automobile manufacturers adopted it for much the same reason that manufacturers in nearly every other line of merchandise: because it provides the most logical way for the salaried or wage-earning man to buy. He gets paid in weekly or monthly installments and he can pay for his comforts and needs most readily on the same basis.

The system may be abused—so may almost any method of operation in any line of industry. Time-payments have made possible, not only wider sales of products, but a higher standard of living for the average man than would otherwise have been within his reach.

These basic facts are worth repeating, that they may not be lost to view in discussions of current conditions as regards time payments from time to time.

Our Industry Today

Continued Good Weather Keeps Car Demand at Brisk Rate—New Production Records Established— Foreign Sales Continue Progress

NEW YORK, May 6—Continued good weather in most parts of the country has kept the demand for cars going at a brisk rate during the week just past. Most of the producers went into May with a large backlog of unfilled orders, amounting to approximately 50,000 automobiles in the case of one large maker of low-priced models. April established a new high output record for a number of the factories, as well as for the industry as a whole. In several instances where production fell short of 100 per cent of capacity it was because enough bodies could not be obtained for the assembly of closed models.

The current prosperity of the industry is being widely diffused. Due to the delays in making deliveries of the models that are highest in public favor, all the manufacturers are receiving their share of the business, even if it represents to an extent the overflow of orders that others are not able to fill.

Output Follows Sales Reports

A close watch is being kept for the first signs of a slump in demand. The industry has passed through periods before when a surplus of orders was turned almost overnight into a dearth, and with total production running to 400,000 vehicles monthly, it would not take long for large stocks to pile up at the factories and in the hands of distributors and dealers. But so far production has been gaged in accordance with sales reports received as frequently as ten days apart.

Foreign sales continue at a record-breaking rate, and it does not appear probable that they will be affected in any serious degree by the reimposition of the McKenna duties of 33 1/3 per cent on imports of passenger cars, parts and accessories into Great Britain. The British market has been by no means the most important in the export field for American cars and for the most part the sales there have not been directly competitive with British makes, which run mainly to small, light models. Several American producers have British assembly plants.

Foreign Trade Improvement

Another important consideration is that the return of Great Britain to a gold basis should relieve foreign trade from the currency fluctuations that have been a deterrent in many of the best export markets. Business, in the long run, will unquestionably be benefited.

The monthly survey by AUTOMOTIVE INDUSTRIES of conditions in centers of production and distribution develops two rather significant facts, aside from the generally favorable state of the market. The first is that agricultural districts in

(Continued on page 841)

N.A.C.C. to Confer Again with N.A.D.A.

Directors of Manufacturers' Body Vote Further Discussion of Sales Meeting Plan

DETROIT, May 7—Directors of The National Automobile Chamber of Commerce at their meeting this week voted to hold another meeting with officials of the National Automobile Dealers Association to further consider participation in the series of sales meetings for dealers which the latter association is planning. A meeting for this purpose will be called by F. J. Haynes, chairman of the special committee, at the convenience of the conferees.

Directors voted a resolution to the effect that truck and bus transportation is too new to surround with a mass of legislation. Truck and bus legislation, it was held, should come under the Interstate Commerce Commission only to the extent of granting certificates of public necessity and convenience when states disagree on conditions surrounding interstate operation.

The meeting was held at the Detroit Athletic Club and following the session the directors were guests of the Detroit members at a dinner party at the Detroit Country Club. All directors but Roy D. Chapin and A. H. Swayne were present, Mr. Chapin being in Africa and Mr. Swayne in Europe.

Apperson Announces Price Reductions

KOKOMO, IND., May 6—The Apperson Automobile Co. has announced price reductions ranging from \$45 to \$175 on a six-cylinder chassis and from \$50 to \$200 on the "Straight Away" eight-cylinder chassis. The price of the eight-

cylinder brougham remains unchanged at \$2,650. The eight-cylinder "Vee" motor chassis, for a long while the mainstay of the Apperson line, has been recently discontinued.

A marked increase in the demand for the "Straight Away," as well as in the rest of the line, has brought about the reduction in prices, and it has been necessary to add to manufacturing facilities at the plant, according to E. M. Lubeck, general sales manager.

The revised price list is as follows:

	Old Price	New Price
Six		
Plain phaeton	\$1,695	\$1,650
Sport phaeton	1,850	1,750
Brougham	2,250	2,150
Coupe	2,350	2,250
Sedan	2,395	2,250
Eight		
Phaeton	2,550	2,350
Brougham	2,650	2,650
Coupe	2,800	2,750
Sedan	2,850	2,750

Variety Assured in Indianapolis Race

INDIANAPOLIS, May 5—The line up and diversified class of the field scheduled for the Thirteenth International 500-Mile Indianapolis Race this year have several features of particular interest.

There are five assured foreign entries; three of these are Guyot Specials, privately built in France to designs of Albert Guyot, who will drive himself. These jobs are six cylinder single sleeve valve types, with engines made under the McCullum patents, which have been used in the British Argyll for many years. The stream lining of these cars has been carried to the extreme.

Another French car to be called the Schmidt Special is down on the list, though no announcement of the maker is yet released. Albert Schmidt, who entered the car, went to France some time ago to buy and bring the car back. Pietro Bordino, with his Fiat Special, was also one of the last week entries.

The annual battle between the Miller built jobs and the Duesenbergs promises to live up to former standards with 12 Miller Specials and four Duesenbergs on the list before the close of entry time. Two of the Millers are front drive cars.

Practically all the racers, of which details are known, are to be equipped with super-chargers. The Guyot super-chargers are said to rotate at only three-fourths engine speeds, which is a revolutionary change from the types shown on the track last year. To date 29 cars are in the line up, but last minute entries mailed before closing time may raise this number.

April Output Breaks All Records

WILL TRY NEW FORD PAYMENTS IN TOLEDO

TOLEDO, May 6—Toledo will be the second city to try out the new Ford financing plan, by which cars are sold with as low as \$12.40 down payment and weekly installments. This announcement was made here today, following the taking over of the Toledo Bond and Investment Co. here by John S. Reynolds of South Bend, Ind., and his associates. The company has been operating about two years and will now handle exclusively commercial paper of Ford dealers.

Reynolds said that the plan would be worked out in Toledo as well as Detroit to provide an experience table before its adoption in other centers. No change in capital structure of the present company is contemplated to handle the new sales financing plan. G. E. Marshall, representing the new group, will be general manager of the company.

N. A. C. C. Preliminary Data Shows 420,373 Cars and Trucks Shipped During Month—Former High Total Exceeded by Four Per Cent

DETROIT, May 6—Shipments of cars and trucks to dealers during April totaled 420,373, according to preliminary figures submitted to the National Automobile Chamber of Commerce directors at their meeting here this week. This is a new monthly record, running approximately 4 per cent higher than the total for May, 1923, which saw a production of 404,000.

The April figures as given include the Canadian figures of some companies. With all Canadian manufactured cars included and also the foreign assembled cars of Ford Motor Co., the figure will be considerably increased. For the most part it represents shipments by manufacturers in the United States to dealers in the United States. Canadian assembled and other foreign assembled cars will increase the figure by more than 10,000.

Discontinue Sale of Tetraethyl Lead

Future Distribution Depends on Parley Called by Surgeon General Cumming

NEW YORK, May 6—Sale of tetraethyl lead was stopped today in 27 States by the Ethyl Gasoline Corp., following the completion of an investigation by Columbia University into the alleged harmful qualities of the product, and the announcement that Surgeon General Hugh S. Cumming had called a conference to consider the whole matter at Washington, May 20.

A statement issued by the company indicated that the future sale of leaded gasoline will depend upon the action taken at the Washington conference and on the results of the investigation which, it is believed, will be started by the Surgeon General. Deliveries to the United States Government and to foreign governments and for research and experimental purposes were not affected by the company's action in halting public sale, it was explained.

Operated at Loss

The statement further declared that the ethyl gasoline business was not an ordinary commercial enterprise conducted in the expectation of a present profit, but for a long time to come must necessarily be operated at a loss. Never, it was stated, in two years' use and distribution of the product had any ill effects been observed.

The report prepared by Columbia University has not yet been made public, but several scientists have declared that the use of leaded gasoline would produce slow poisoning in persons who breathe the fumes in the streets. A preliminary investigation conducted by the United States Bureau of Mines some time ago was favorable to leaded gasoline, saying that the danger to persons in the streets was remote.

The truck figures of the record breaking month will approximate 15 per cent of the total. Ford truck shipments will approximate 40,000 with about 20,000 more from other truck and bus manufacturers and assemblers. In the case of manufacturers making both cars and trucks the commercial car figure is included in the general total.

Though the April total sets a new all-time record, manufacturers are looking for this total to be increased again during the present month. Production at the outset shows a continuation of the April pace with some manufacturers seeking to increase because of demand from dealers. That this record output will continue through is considered certain, in view of the fact that cars as shipped are going to owners with little or no stop-over in dealers' hands. Factories are behind shipping specifications from dealers in most cases and deliveries to owners in many cases are two to three weeks behind dealer deliveries.

Used Cars in Proportion

Used cars are being sold in practically exact proportion to new cars, according to factory reports, and though dealers are compelled to make two sales for nearly every new car moved they are finding plenty of prospects for the trade-ins. This condition is considered certain to continue through the present month and for the largest part of June at least. Reduction in factory operation will occur simultaneously with the slowing up of business in dealer establishments but is not looked for before the usual summer slowing up in July and August.

Output Behind 1924

NEW YORK, May 7—Despite the record breaking production in April, the total output for the year to date is still below the figure for the first four months of 1924.

Cars and trucks produced in the United States up to May 1, 1924, totaled 1,478,562, whereas the figure for the first four months of 1925, with truck production for April estimated, was 1,367,802.

Make Body Changes in Peerless Sixes

CLEVELAND, May 6—Changes in the design of the radiator, hood and cowl lines have been made on the Peerless six-cylinder chassis, it was announced today by the Peerless Motor Car Co. The appearance of the six-cylinder chassis, now known as Model 72, is similar to the "Equipoised 8" model introduced seven months ago. Only a few minor refinements have been made in the motor.

Extending the tops over the windshields, obviating the necessity for separate sun visors and the employing of a double line of belt molding, adds to the appearance of the length of the closed models. A large variety of two-tone color combinations are available to choose from.

A new sport roadster selling at \$2,285, \$50 less than the former two-passenger model, has been included in the line. In addition to the wide three-passenger driving seat, a comfortable folding seat located in the sweeping deck provides ample space for two extra passengers. Through a door on the right side of the deck, bags, luggage and golf clubs may be stowed away under lock and key.

The roadster and seven-passenger models are mounted on the 133 in. wheel-base chassis, and the remaining body styles are carried on the 126 in. wheel-base chassis. Other than the roadster already referred to, there have been no changes in the price of the Peerless six-cylinder model.

Tool Builders Meet to Consider Markets

Merchandising Main Topic at
Buffalo Session of Association—Fix Ethics Code

BUFFALO, May 5—The twenty-third spring meeting of the National Machine Tool Builders Association, which was held here April 29, 30 and May 1, was devoted entirely to the subject of marketing, including a session on market research and advertising, a session on salesmanship and one price policy.

The session also saw an interesting development of the code of ethics of the United States Chamber of Commerce which was adopted by the National Machine Tool Builders Association last fall. In order to make this code thoroughly applicable to the business of selling machine tools, the committee in charge took each principle of business contact as outlined by the United States Chamber of Commerce, and added to this principle the present practices in the machine tool business which are destructive of the adopted principles and which, therefore, should be changed.

Will Pledge Cooperation

The members are expected to file approval of this amplified code at the fall meeting and pledge themselves in writing to live up to the desired practices, and to eliminate those practices which are not in accordance with the code. The committee's work on this matter covers specifically prices, discounts, taking advantage of competitive information, poor cost making, poor pricing, overstatements and misrepresentations of all kind. The code of ethics committee was composed of H. M. Lucas, chairman, H. M. Lucas Machine Tool Co.; F. L. Eberhardt, Gould & Eberhardt, and August H. Tuechter, Cincinnati-Bickford Tool Co.

Will Develop Market Data

A committee was appointed by the association to cooperate with the Department of Commerce in developing market information concerning machine tools with particular reference to the railroad industry, following the practice set by the examination of the automotive industry presented by AUTOMOTIVE INDUSTRIES a year ago. The members of this committee are: J. F. Andress, secretary and treasurer, Barnes Drill Co.; E. P. Welles, president, Charles H. Besley & Co.; H. B. Kraut, vice-president and general manager, Giddings & Lewis Machine Tool Co.; G. B. Gradolf, vice-president and treasurer, Cincinnati-Bickford Tool Co.; C. L. Cameron, sales manager, Gould & Eberhardt.

A research committee on plant capacity was also appointed, including H. W. Bockhoff, vice-president and manager, National Automatic Tool Co.; Charles A. Hoefer, secretary and treasurer of the

Hoefer Manufacturing Co., Inc.; W. T. Montague, sales manager machinery department Norton Co. and G. A. Markussen.

A committee was also appointed to continue the work on cooperative advertising and to look into the question of further promotion developments. This committee is comprised of: Frederick B. Heitkamp, Cincinnati Milling Machine Co.; E. P. Blanchard, Bullard Machine Tool Co.; Henry Buker, Brown & Sharpe Mfg. Co.; H. S. Robinson, Cincinnati Shaper Co.; Ralph B. Busch, Cisco Machine Tool Co.

BIG DROP REPORTED IN HORSE RAISING

WASHINGTON, May 4—Automobiles and tractors are rapidly relegating horses and mules to the background on American farms and the United States Department of Agriculture frankly admits this week that an acute shortage of these animals seems certain within five years.

"Unless more horse and mule colts," says the Department, "are raised during each of the next five years than were raised in 1924, the number of horses on farms five years from now will be only about 66 per cent of present numbers, and of mules 74 per cent. Five years from now, for animals of the most useful age, 4 to 9 years, there will be only 191 head of horses for every 450 head now on farms, and only 278 mules for every 519 at present."

Battery Makers to Meet in Chicago

NEW YORK, May 6—A meeting of the National Battery Manufacturers' Association will be held at the Congress Hotel, Chicago, May 15 and 16. Reports of the various committees will be read and among the things to be discussed are: standard ratings of radio "A" batteries; the publication of a booklet dealing with the virtues of storage batteries; uniform cost accounting; model constitution and by-laws for dealers' associations; uniform laws to protect rental batteries; traffic and freight rates.

A new commissioner will be selected to fill the vacancy left by A. A. Mowbray, and also the dates of future meetings will be decided upon. D. H. Kelley, president of the association, will preside.

CORRECTION

In the April 23 issue of AUTOMOTIVE INDUSTRIES it was stated that Remy electrical units were standard equipment on the Oldsmobile Six. This is incorrect, as Delco equipment is standard.

March Exports Beat All Previous Marks

Total of 23,265 Cars Betters
Record of April, 1924, by
47 Per Cent

WASHINGTON, May 7.—Automotive exports from the United States in March created a remarkable record with a total of 23,265 passenger cars, an increase of 47.2 per cent over the previous record month of April, 1924, and 4,728 trucks or more than twice as many trucks as were exported in February, 1925, or March, 1924, it is announced here by the Automotive Division of the U. S. Department of Commerce.

The export to production figure has reached 7.7 per cent for the United States and the remarkable figure of 50 per cent for Canada, or a balanced figure of 9.4 per cent for the combined passenger car and truck export-production ratio of the two countries. If to the regular export figures are added foreign assemblies, the resultant ratio is 13.5 per cent. The per cent of exports to production of both passenger cars and trucks in March, 1924, was 4.3, which increased to 6.1 in February, 1925, and again to 7.7 in March last.

Foreign Assemblies Raise Total

American foreign assemblies likewise reached a record figure of 15,433, covering all reported foreign assemblies of passenger cars and trucks and this added to the combined United States and Canadian March exports, amounting to 35,566, gives a total of approximately 51,000.

The Automotive Division announces that the record United States passenger car exports during March, valued at \$17,675,385, resulted not so much from the finding of markets hitherto little worked but rather from a more aggressive development of those which have been recognized for some time as constituting the leaders. With the leading markets for American passenger cars varying slightly during March, Italy, alone, made the most marked change, rising to seventh place, in accounting for 1,069 passenger cars or approximately 41 per cent of her entire 1924 takings.

Of the remaining automotive exports other than passenger cars and trucks, the most striking advance was shown in the case of automobile engines, particularly those for passenger cars. These last totaled 12,261.

CAP FIRM CHANGES NAME

CHICAGO, May 4—The manufacturer of Monogram Self Closing radiator caps has changed the name of the concern from the General Automotive Corp., to the Kingsley-Miller Co. The change is made to better acquaint the trade with the names of the two officers in active charge of the company.

\$17,811,239 G. M. First Quarter Net

Nearly Equal to Same Period of
1924, Despite Lower Pro-
duction Rate

NEW YORK, May 6.—The report of General Motors Corp., for the first quarter of 1925 shows only a small reduction in earnings as compared with the corresponding period of last year, despite the greatly curtailed rate of production during the first two months of the current year. Especial significance is attached to the report because it gives an indication of how the policy of holding production to the sales level is working out.

Net earnings for the quarter were \$17,811,239, amounting, after preferred dividends, to \$15,900,879 for the common stock equal to \$3.08 a share on the 5,161,599 shares outstanding. This compares with \$3.42 per share for the first quarter of 1924. A comparison of sales and earnings for the two periods follows:

	First Quarter 1925 units	First Quarter 1924 units
Sales to dealers.....	155,432	215,550
Dealer sales to users	135,883	140,786
Net earnings after taxes	\$17,811,239	\$19,400,956
Earned on common stock	\$15,900,879	\$17,669,887

Commenting on these figures, the report points out that sales to dealers in the first quarter of 1925 "were substantially 20,000 cars in excess of sales to users, whereas in the first quarter of 1924 such excess was substantially 75,000. It is evident, therefore, that the corporation enters the second quarter of the year, which is the period of heaviest retail demand, with subnormal stocks. In the corresponding period last year stocks in the field were excessive, necessitating a greatly curtailed production schedule. Both sales to dealers and sales to users have been influenced by the fact that the Chevrolet Division introduced a new model at the beginning of the year and, as is usual with the in-

STOUT PLANES ORDERED

DETROIT, May 6—Stout Metal Airplane Co., has received orders for five planes of the type now being used by Ford Motor Co. in its transportation service between Dearborn and its Chicago assembly branch. The names of the buyers are not announced by the Stout company but it is stated that these companies will use their planes for transporting materials between cities in the same manner that the Ford company is using them.

The force of workmen at the Stout plant in Dearborn has been doubled in the past ten days and the company is preparing additional shop equipment to bring its plant to full working strength.

troduction of a new model, it was impossible to bring production up to the point of meeting sales demand during this period."

Cash and Government securities aggregated \$100,916,156 as of March 31, 1925, and at the date of issuing the report had increased to approximately \$125,000,000, against \$29,399,991 as of March 31 a year ago, at which time the corporation had \$15,000,000 in bank loans outstanding, whereas at the present time it has no indebtedness whatever except its current accounts payable.

FORD MAY START PLANT IN MEXICO

MONTEREY, MEXICO, May 1 —Representatives of the Ford Motor Company are in Mexico investigating the situation with the view of locating an assembly plant. Although Monterey, San Luis Potosi and Mexico City have been visited by them and conditions inquired into, the capital is most favored as a site for the proposed plant, it is stated. At Tampico the assembling of Ford automobiles has been carried on on a small scale for some time, the output of the plant there being about fifteen cars a week.

The good roads movement in Mexico is being watched with interest by the Ford Motor Company. The fact that the contract has already been awarded for the construction of two trunk highways to lead from Rio Grande border points to Mexico City is taken as an indication that the Federal Government will accomplish much in this line of development during the next few years.

AIR RACES IN OCTOBER

ST. JOSEPH, MO., May 5—The International Air Races, the premier event being the Pulitzer speed classic, will be held on Long Island, N. Y., late in October, providing the necessary guarantees are made, it was decided by the National Aeronautical Association in session here today. The original recommendation for the Mineola army air station as the scene for the flying tests was made by Major W. M. Hensley, Jr., commandant of the field.

BOSCH INCREASES OUTPUT

SPRINGFIELD, MASS., May 5—Arthur T. Murray, president of the American Bosch Magneto Corp., reports that the company plants in Brightwood and in Cambridge are running on a production schedule of more than \$1,200,000 monthly, marking a new high level in its history. The force has been increased in the Brightwood plant to 2200, he said, and in the former Gray and Davis plant in Cambridge there are now 1200 employed.

Favor Guaranty in Used Car Financing

Survey Reveals Greater Losses
Among Companies Using Non-
Recourse Paper

CHICAGO, May 5—Finance companies in the United States favoring the unconditional guaranty of used car paper outrank those who favor repurchase agreements by four and one-half to one. Those companies doing business with guaranty used car paper in 1924 sustained a loss of 0.157 of 1 per cent as compared with 0.735 of 1 per cent sustained by companies doing business without recourse.

These figures were compiled by the National Association of Finance Companies. A vote was taken among 355 representative finance companies in all parts of the country which resulted in the board of directors of the association passing a resolution reflecting the opinion of the majority.

The survey revealed that the amount of business transacted by companies using guaranty paper amounted to \$38,759,954, as compared with \$2,194,932 done by companies using non-recourse paper. Twenty per cent of the companies voting were forced by competition to take some used car paper without recourse although they favor unconditional guaranty of repurchase agreement. It was shown that among those favoring repurchase agreements 19 were members of the association and 39 were non-members. Of those favoring unconditional guaranty 87 were members and 179 were non-members. Nine non-members were in favor of non-recourse as compared with 23 members.

Mack Trucks Shows First Quarter Gain

NEW YORK, May 7—A substantial gain in earnings for the first quarter of this year, as compared with the corresponding period of 1924, is reported by Mack Trucks, Inc. Net profits, after depreciation, taxes and other charges for the quarter were \$1,754,869, equal to \$4.33 a share earned on 339,730 shares of no par common stock. This compares with \$1,430,307, or \$4.04 a share earned on the 283,109 shares outstanding in the first three months of last year.

The volume of business in the first quarter of 1925 showed an increase of 30 per cent over the same period of 1924. The consolidated balance sheet as of March 31, 1925, shows total assets of \$51,451,341, comparing with \$41,630,791 at the end of the first quarter of 1924. Profit and loss surplus grew to \$26,960,179 from \$18,836,508. Current assets totaled \$35,832,117, against \$28,926,962; and current liabilities including reserve for taxes, \$5,294,358, against \$3,839,500.

Dodge Not Troubled by Ban in Michigan

Financing Plans Completed with
Stock Exchange Listing—
New Board Elected

NEW YORK, May 7—Undeterred by the action of the Michigan Securities Commission in forbidding the sale of Dodge Brothers, Inc., preference stock in that State, Dillon, Read & Co. proceeded today to carry out the scheduled plans for splitting the preference and Class A common shares, both of which have been admitted to listing by the New York Stock Exchange.

The listing of the stock, together with the fact that the market prices of the securities have been unaffected by the Michigan developments, have allayed any fears that might have arisen among the investing community. Many other high-grade stocks, it is pointed out here, sell partly on the basis of the good will and earning power of the company.

The new company has been incorporated in Michigan, and a board of directors named. Clarence Dillon and E. G. Wilmer are both members, as well as Horace E. Dodge, Jr., and Frederick J. Haynes, president of the company. The others are: George W. Davison, president of the Central Union Trust Company of New York; Theodore H. Banks, vice-president of the American Exchange National Bank of New York; Bernard A. Eckhart, president of the Eckhart Milling Co. of Chicago; Herbert Fleishhacker, president of the Anglo-London-Paris National Bank of San Francisco; R. P. Lamont, president of the American Steel Foundries, Chicago; Hunter S. Marton of Blair & Co., New York bankers; H. V. Popeney, secretary and treasurer of Dodge Brothers; Henry M. Robinson, president of the First National Bank of Los Angeles; Reeve Schley, vice-president of the Chase National Bank of New York; Arthur T. Waterfall, vice-president of Dodge Brothers, and Harrison Williams, New York.

PATENT INFRINGEMENT

NEW YORK, May 7—United States Circuit Court of Appeals here has just handed down a decree sustaining patent No. 1,483,164 granted to William P. Hammond on a mirrored windshield device for automobiles. Reversing the decision in the lower court, Judge Martin T. Manton held that the patent had been infringed by the Benzer Corp.

JR 8 LOCOMOBILE IN PRODUCTION

BRIDGEPORT, May 7—George E. Daniels, vice-president and general manager of the Locomobile Company of America, announces that deliveries of their new popular-priced eight-in-line models—the JR 8—will be made in June. Touring, 5-passenger brougham and 5-passenger sedan comprise the line.

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

NEW YORK, May 6—The partial restoration of the gold standard in England was the most conspicuous financial event of last week, but was not followed by any marked change in general business conditions either here or abroad. Domestic industrial and trade movements are irregular, with a somewhat less definite tendency toward lower levels of activity than has been apparent in recent weeks. The trend of general commodity prices is still downward.

Sharp advances in grain prices last week followed the appearance of private reports forecasting reduced yields of winter wheat. May wheat rose more than 19 cents from the previous week's low. Cotton prices were firm, despite reports of increased acreage and of the breaking of the drought in the Southwest.

Car loadings in the week ended April 18 numbered 922,778, comparing with 917,284 in the preceding week and 876,923 in the corresponding period last year. The total two years ago was 968,042.

Continued increase in the production of crude oil in the Smackover field of Arkansas brought the daily average for the country in the week ended April 25 up to 2,156,450 barrels, as compared with 2,080,650 barrels in the preceding week and 1,941,050 in the corresponding period last year. Exports of refined petroleum products in March amounted to 361,489,928 gal., as against 295,300,493 in March last year.

Detailed figures of foreign trade in March show that all classes of exports were larger than a year earlier. All groups of imports likewise increased, with the exception of raw foodstuffs, receipts of which amounted to \$46,848,000, as compared with \$67,294,000 in March a year ago.

Bank debits to individual accounts reported by the Federal Reserve Board for the week ended April 29 were 9.3 smaller than the total for the preceding week, but 5.4 per cent larger than that for the corresponding period last year.

Fisher's index of wholesale commodity prices declined again last week from 155.7 to 154.1, the lowest figure reported since the second week in December. Dun's monthly index for May 1 is $\frac{1}{2}$ of 1 per cent lower than a month earlier and $5\frac{1}{2}$ per cent lower than the year's peak at the beginning of February.

Discounts by Federal Reserve banks declined \$12,400,000 during the week ended April 29. Bills secured by Government obligations decreased \$4,100,000 and "other bills discounted" \$8,300,000. Open market purchases declined \$8,700,000, holdings of Government securities \$4,000,000.

A.E.A. Favors Release from Clayton Act

Directors Approve Action of Dry
Goods Industry on Anti-
Trust Laws

NEW YORK, May 5—The Automotive Equipment Association through the action of its board of directors has gone on record as indorsing the movement of the Wholesale Dry Goods Industry and other trade organizations for release from confusion in anti-trust laws.

The objects of the movement are contained in the following paragraphs from resolutions adopted at the convention of the Wholesale Dry Goods Industry and concurred in by others:

It is the opinion of this convention that the anti-trust legislation enacted in 1914, namely the Clayton act and the Federal Trade Commission act have done nothing to ameliorate the grievous burdens which the severity of the Sherman law have placed upon the plain business interests of this country.

The Dry Goods Industry in common with all other like industries adheres to the universal condemnation of trusts and monopolies, but insist that neither their industry nor countless other like industries of this country can become trusts or monopolies and that, therefore, the individual members of these great industries ought no longer to be prevented by the laws of our country from useful and sensible cooperation with each other. Copies of the resolution have been sent to President Coolidge, members of the Senate and House of Representatives and others.

The following manufacturers were elected to membership at the mid-convention meeting of the directors of the Automotive Equipment Association, held at Hot Springs, Ark., April 6 and 7: Guelph Spring and Axle Co., Guelph, Ont., Canada; Lockett Patch Co., Detroit, Mich.; The Charles Parker Co., Meriden, Conn.; Yale Electric Corp., Chicago, Ill. The membership of the Douglas-Dahlin Co. of Kansas City was transferred to the Federal Mogul Corp. of Detroit which has absorbed the Douglas-Dahlin company.

FORM BRAKE COMPANY

DETROIT, May 5—Steeldraulic Brake Co. has been incorporated in this city to license the manufacture of a new type mechanical four wheel brake. Officers are John Sneed, president; B. F. Wineberg, vice-president; Max Finkelston, secretary and treasurer, and J. E. Harzfeld, director.

The type of brake which is being offered by the company has been in process of development over the past three years under the direction of Mr. Sneed. Under plans of the company it will not manufacture the brake itself but will issue licenses for its manufacture and use. Mr. Sneed has been connected with the automobile business from its early days principally in the retail field though for a number of years he was prominent as a car rebuilder.

Important Topics on Transport Program

Coordinated Development Plan Will Be Attempted at Mid-West Conference

NEW YORK, May 6—Authorities representing truck and bus interests, the railroads and the electric railways, as well as Federal and local highway officials, are scheduled to speak at the Mid-West Motor Transport Conference May 27 and 28, in the Hotel La Salle, Chicago, where divergent views on highway transportation questions will be presented in an effort to iron out differences and agree upon a coordinated plan of development for the future.

A feature of the conference will be the presentation of a report on the Cook County Survey, which was undertaken to lay out a system of streets, highways and terminal facilities for the Cook County community which would provide for economical transportation and delivery and eliminate traffic congestion. This report will be presented at the Highways Session.

How motor bus and electric companies can settle their differences will be discussed by H. A. Mullett, assistant general manager, Milwaukee Electric Railway and Light Co., and John A. Ritchie, president, Chicago Motor Coach Co. W. C. Parker, manager of the motor bus department, Reo Motor Car Co., will preside at this session on the opening day.

Railroad Men on Schedule

On the first day also A. J. Brosseau, president of Mack Trucks, Inc., will talk on "The Relation of Highway Transport to Other Transportation Agencies," and Martin L. Pulcher, president of the Federal Motor Truck Co., will preside at a session devoted to motor trucks.

The topic at the motor truck session on the second day "Why the Motor Truck Is Successful as a Railroad Ally" will be discussed by G. C. Woodruff, general freight agent, New York Central R. R., and R. C. Morse, superintendent of transportation, Pennsylvania R. R. Both these roads have been the leaders in adapting the truck to their uses.

At the closing session, presided over

NEW A. C. MODELS

LONDON, April 29 (by mail)—A. C. Cars, Ltd., has brought out two entirely new 12-hp. cars, a 2-3 passenger roadster at £435 and a 5-passenger convertible touring at £495.

The new models are identical with and include all the chassis refinements of the regular six-cylinder A. C. cars, except that a new four-cylinder engine incorporating several new features is employed in place of the six. All types of bodies on the six-cylinder chassis may be mounted on the four-cylinder model if desired. Balloon tires are fitted without extra charge.

GASOLINE HITS NEW MARKS IN MARCH

WASHINGTON, May 7—New records in consumption and production of gasoline were established in March, according to the Department of the Interior. During that month domestic consumption totaled 620,635,551 gallons, an increase of 158,615,166 over March, 1924, or 35 per cent gain. Production was 853,574,214 gallons, an increase of 63,132,535 gallons over February.

by Cyrus McCormick, Jr., vice-president of the International Harvester Co., William M. Jardine, Secretary of Agriculture, will talk on "The Public and Highway Transportation," and T. R. Dahl, vice-president of the White Co., will speak on the subject of greatest current interest to truck and bus interests—"Is Regulation of Interstate Motor Vehicles Necessary?"

There are other speakers at the sessions besides those mentioned, and several group discussions on current problems.

S. A. E. Tackles Balloon Tire Standards Again

NEW YORK, May 6—A committee of the Society of Automotive Engineers with Henry M. Crane as chairman and eight or ten prominent passenger car engineers as members is about to hold preliminary conferences to determine if there is any prospect of harmonizing practice in use of balloon tire sizes to a greater extent than at present. This committee constitutes a reestablishment of the Tire and Rim Division of the Society.

Analysis of the sizes now in the S. A. E. Handbook as recommended practice shows that many other sizes are in common use on passenger cars, so that the recommended practice does not conform very closely to actual usage.

The division as now constituted will not attempt to formulate specific standards or recommendations. It will try simply to determine whether such standardization is feasible. If its decision is favorable to immediate efforts toward further standardization, a new committee, including representatives of all branches of the automotive industry, will be appointed to formulate actual standards.

S. A. E. JOINT MEETING

NEW YORK, May 5—Members of the Metropolitan and Pennsylvania sections of the Society of Automotive Engineers are to visit the Naval Air Station at Lakehurst, N. J., on May 12 for a joint meeting which will take the place of the regular monthly meeting of the Pennsylvania section in Philadelphia.

Piston Ring Concern Under New Control

Baltimore Concern Taken Over by Pittsburgh Company in Stock Transfer

BALTIMORE, May 6—The American Hammered Piston Ring Co. of this city, a subsidiary of the Bartlett Hayward Co., has been taken over by the McClintic & Marshall Construction Co., Pittsburgh Pa., in which Secretary of the Treasury Andrew W. Mellon is interested. The change came about recently when the Pittsburgh concern took over the Bartlett Hayward company; the American Hammered Piston Ring Co. being one of the subsidiary companies, was included in the deal.

It was stated at the factory that the change in the company was only a stock transfer, and the business is being operated as it was operated in the past. The officers of the American Hammered Piston Ring organization are C. F. Hockley, chairman of the board; W. C. Stettinius, president and general manager; A. M. Morton, vice-president and chief engineer; George E. Probest, Jr., secretary and treasurer, and R. D. Pippen, assistant treasurer.

Gotfredson Producing Special Truck Bodies

DETROIT, May 6—Gotfredson Truck Corp. is now furnishing its trucks complete with bodies and cabs of its own construction to meet special requirements of buyers. This is in addition to the standard bodies and cabs which it has been building for several years, the new bodies being of special types for use with lighter chassis models in delivery work.

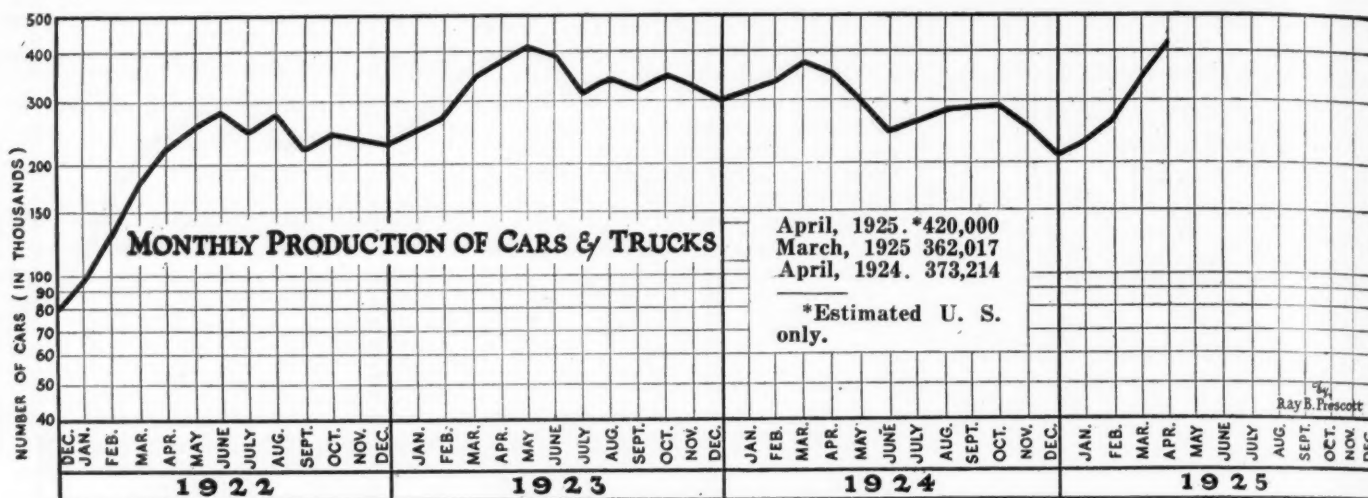
Among the new bodies are types designed especially for bread and candy delivery vehicles. These are equipped with trays and shelves to provide for loading and unloading with the greatest facility. The sectional idea has been used in some cases so that goods can be taken out in the order of the day's delivery without disturbing other goods carried.

Under company plans bodies for all types of delivery will be built to meet the special requirements of the purchaser, a new department having been added for this purpose to the truck plant here.

DETROIT SALES INCREASE

DETROIT, May 4—Sales of new cars in Detroit during April totaled 8792, an increase over the March total of 6980 and a decrease of several hundred from the April, 1924, total of 9068. Closed car sales were 5841 and open cars 2951, a ratio of about two to one. Truck sales for the month were 704.

APRIL PRODUCTION PLACED AT 420,000



Finds Good Markets South of Equator

TOLEDO, May 4—Conditions in Australia, New Zealand and South Africa are extremely favorable for an expansion of American automobile business, according to R. J. Archer, vice-president and manager of the John N. Willys Export Corp., who has just returned from an eight month's trip to the automotive markets south of the Equator.

In New Zealand, which is ranked as the wealthiest country per capita in the world, Archer says he found the wool, mutton and dairy business in the best shape they have ever known. Roads, although largely of gravel, are in fair condition and the automobile is rapidly taking its place as the leading method of transportation.

Australia, still handicapped by high taxation and troubled by labor difficulties, as an aftermath of the war, is working out of these commercial difficulties. Wool and wheat crops brought high prices during the last year and the whole continent is experiencing its greatest period of prosperity since the armistice.

In South Africa different conditions in many respects were found by Archer. Of the total population of more than 7,000,000 occupying 750,000 square miles, only 1,520,000 are whites. This fact is encouraging to expansion and the whole land is making attractive offers to aliens barred from the United States by restrictions.

In his tour of the South African states Archer traveled thousands of miles in motor cars and found the roads good, bad and indifferent. There are very few bridges and during rainy seasons cars are held up at rivers pending the fall of flood waters. American makes of cars are popular because of stamina and power, he found.

One of the most interesting features of his tour was the visit to Rhodesia where activity has developed in recent years. Chrome, ore, gold and diamond

mining are the backbone of industry in that country. Timber operations have also yielded much wealth and some success has been achieved in cotton.

\$115,000 Bid in Sale of Dorris Motor Co.

ST. LOUIS, May 6—A bid of \$115,000 for the plant and business of the Dorris Motor Car Co. was made at the opening of the auction on April 29 at the plant, the auction being carried out as advertised under a court order of voluntary dissolution.

H. B. Krenning of Arcadia, Mo., who was president of the concern until 1917, made the bid of \$115,000. The bidding opened at \$75,000 and the amount was bid up \$5,000 at a time until the amount mentioned.

At the opening session the auctioneer explained that the company was voluntarily quitting business and that its financial statement as of February, 1925, showed a valuation of \$580,955 after \$240,000 had been deducted for depreciation. Listed in the assets of the company are \$26,000 in customers' notes and \$21,580 in accounts receivable.

The bid for the entire plant will stand only in the event that the sum exceeds the total of the 27 items in which the assets have been grouped. Similarly the bids for the separate items will stand only if they aggregate a larger sum than the lump bid.

RELIABLE TRUCK CO. SOLD

CHICAGO, May 5—Theodore Friedberg of New York has purchased the Reliable Motor Truck Co. of this city, for \$70,000 net to the receiver and without adjustments, the Chicago Title and Trust Co., the receivers, said today.

According to Fred Bernstein of Bernstein, Zolla and Bernstein, a local law firm, who represented Mr. Friedberg in the purchase, the company has been reorganized and will conduct the business under the name of the Reliable Trucks Inc.

Selden Truck Starts Under New Control

ROCHESTER, N. Y., May 6—A new Selden Truck Corp., has started functioning, replacing the old company which was sold last month in receivership proceedings to the Fabric Body Corp., of Detroit.

The executive staff of the old corporation has been retained in the newly reorganized company as follows: A. S. More, president and general manager; William C. Barry, vice-president; S. P. Gould, secretary; E. B. Osborn, treasurer and F. J. Kolb, assistant secretary and assistant treasurer.

The Fabric Body Corp., will act as a holding company through the following board of directors: Mr. More, Mr. Barry, K. L. Childs, New York, president of the Fabric Body Corp., F. E. Devans, Rochester; W. W. Gedge, Detroit, secretary Fabric Body Corp., W. S. Speed, Louisville, Ky.; Merlin Wiley, Detroit; James Wilson, Detroit, vice-president and treasurer, Fabric Body Corp.; H. E. Zimmerman, comptroller, Standard Textile Products Co., New York.

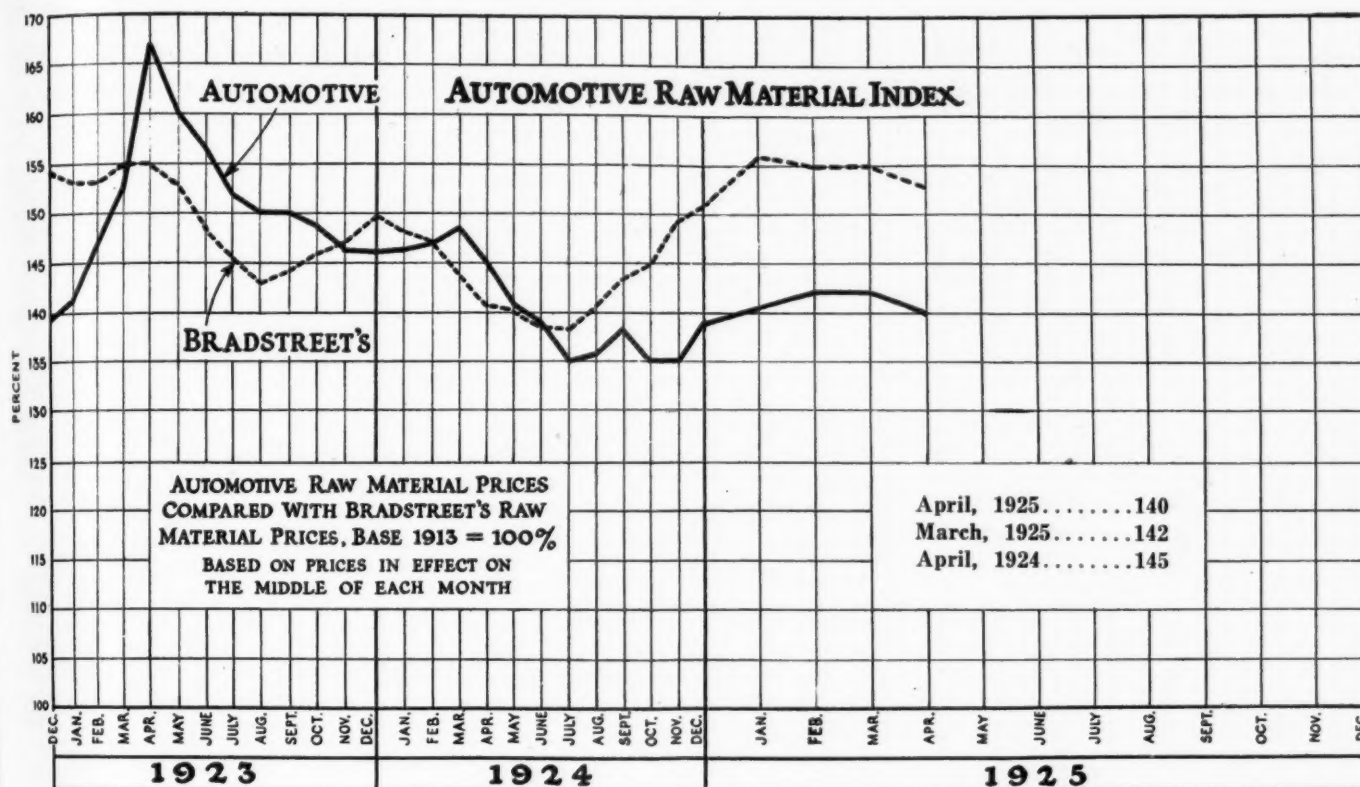
The new corporation will be amply financed to carry on the rapidly growing business in trucks and busses. President More declared that production has already been increased to take care of the largest number of unfilled orders on file since the spring of 1920. Production of fabric bodies for passenger cars and busses will begin shortly at the Selden plant when equipment has been installed to take care of this new branch of the business.

MERCER PRICE CUTS

TRENTON, N. J., May 6—The Mercer Motor Car Co. has just announced a cut in prices of \$250 on the 4-passenger coupe and the 5-passenger sport sedan. These models, which were formerly sold at \$6,500, now list at \$6,250.

No price changes have been made in the other models.

DOWNWARD TREND SHOWN IN PRICES



Farm Localities Buying on Liberal Scale—Good Used Car Trade

(Continued from page 834)

most parts of the country are buying on a very liberal scale, and the second is that the used car situation is better than it has been for a long time.

From Minneapolis, in the heart of one of the great farm regions, comes a particularly optimistic report, indicating exceptionally brisk sales all through Minnesota and the Dakotas. Furthermore, a greater acreage has been planted to crops this spring than ever before, while banks are constantly being reopened after a period of closure and liquidation because they had taken on assets that froze.

Farmers Paying Cash

Seattle says: "Agricultural districts are evidencing more interest in car purchasing than they have for three years." New Orleans finds that although a drouth threatens the southern parts of Louisiana and Mississippi, the farmers are in excellent shape, prices on truck crops and strawberries being far above the average. Philadelphia reports that "salesmen in rural territory declare that farmers are more inclined to buy than in April, 1924, and most of these sales are for cash, or at least are to be settled in two or three payments over a short period."

The word from San Francisco is that

"heavy and continued rains throughout March and April stimulated the buying power of virtually all the smaller communities in northern and central California and this was reflected in the distributing centers of San Francisco, Fresno, Oakland and Sacramento."

Dark Spots in Southwest

The dark spots are in the Southwest. Although the cities are taking their shares of the new cars, the rural districts are badly affected by drouth, and the outlook for the next few months is not considered particularly bright.

Although the tendency in the used car situation is not so clearly defined, there is considerable basis for a cheerful view. Typical of the reports is one from Indianapolis, saying:

A marked improvement in used car trade is evident at present and dealer stocks in general are lower than at any time in the last year. The decline from April, 1924, is estimated at from 40 to 50 per cent. The special Used Car Week instituted by one of the local papers resulted in about 15 per cent less advertising in volume than in a similar period last year, and in the period since then the classified used car advertising has dropped much further.

Some exclusive used car dealers complain that they cannot obtain adequate supplies of used vehicles. Shortages in new cars have helped move used vehicles, and care-

ful trading is the rule. Best of all the cars seem to stay sold and repossession is much less frequent than at the same period last year.

Philadelphia reports that "used cars have been fairly well sold out by dealers, who have been employing, in some cases, high-pressure plans to dispose of them. There are, therefore, not so many to sell as last month, and those on the market go quickly. Compared with the same month last year, used car sales are considerably higher." In San Francisco, Oakland and Fresno used cars are moving better than they have since April, 1924. Similar tendencies are noted in such representative and widely separated communities as Rochester, N. Y.; Columbus, Ohio, and Salt Lake City.

Few Unfavorable Reports

Centers reporting an unfavorable used car market are less than twenty per cent of the whole. From Dallas, Texas, comes the word that although used car sales are higher than they were a year ago, many of the dealers are heavily stocked and are facing a problem of disposing of them without losses. Atlanta reports: "The used car situation is still a serious factor, with most dealers well stocked and giving considerable of their attention to moving merchandise of this type."

Nothing of particular interest is noted in the time payment situation. A few centers report sales on this basis on the increase, but nowhere is any gain in repossessions observed.

Truck sales continue at the high rate established early in the year.

S. A. E. Prepares for Summer Convention

Wide Range of Topics Selected for June Meeting at White Sulphur Springs

NEW YORK, May 7—Members of the Society of Automotive Engineers, at their summer meeting, June 16 to 19, at White Sulphur Springs, will discuss transmissions, fuel utilization, lubrication, brakes, gasoline-electric motorbuses and rail cars, highway safety, headlighting and research matters, including the investigation of riding qualities and noise.

Engineering information pertaining to rail cars, with special reference to the application of the gasoline-electric drive, will be discussed by C. O. Guernsey of the J. G. Brill Co. H. S. Baldwin of the General Electric Co. will give details concerning applications of the gasoline-electric drive to motorbuses.

Brakes Will Be Discussed

O. M. Burkhardt, manager of the society's Research Department, will deliver a paper on the theory of braking, whereas a paper by John Cautley and A. Y. Dodge of the Bendix Brake Co. will cover the engineering phases of mechanical types of brake, servo-mechanisms and self-energizing features. A representative of the hydraulic brake field will be present to tell his story, and an opportunity will be afforded for the open discussion of the brake situation.

D. P. Barnard, 4th, of the Standard Oil Co. of Indiana will be on hand to present the results of his investigation of the mechanism of lubrication. Cylinder-lubrication research will be discussed by A. Ludlow Clayden of the Sun Oil Co. Neil MacColl of the Texas Co. will speak of recent results of his investigation of lubrication factors. A representative of the Bureau of Standards is scheduled to deliver a report covering recent developments in fuel utilization and lubrication that have come from the Cooperative Fuel Research.

Will Feature Demonstrations

P. M. Heldt, engineering editor of AUTOMOTIVE INDUSTRIES, is scheduled for a paper on transmissions. The investigation of noise phenomena will be outlined by H. C. Snook of the Bell Telephone Laboratories, Inc., who will give an elaborate demonstration of apparatus pertaining to the topic. F. C. Mock of the Stromberg Motor Devices Co., Inc., will speak of the dynamics of spring suspensions, whereas R. W. Brown of the Firestone Tire & Rubber Co. will tell of his research on riding qualities and the development of suitable apparatus, methods and technique.

Dr. H. C. Dickinson of the Bureau of Standards will have a paper devoted to driving rules at the Highway Safety session. Secretary of Commerce Hoover

W. R. WILLETT NAMED FLINT VICE PRESIDENT

FLINT, May 5—The election of Wallace R. Willett as vice-president of Flint Motor Co., in charge of production and engineering, was made known this week by Durant Motors, Inc. Mr. Willett succeeds William E. Holler, who resigned recently as vice-president in charge of sales, finance and production. Mr. Willett was president of Durant Motors of Indiana, in charge of the manufacturing operations at Muncie.

The appointment of Mr. Willett is in line with plans of W. C. Durant for development of the Flint Motor Co. and for the promotion of other manufacturing activities in this city. Plans of Mr. Durant for merchandising the Flint car under a system of route stations are now in effect wherever the company has factory branches. It is understood to be part of Mr. Durant's plans to consolidate the manufacturing activities of the several Durant car companies in the Flint and Lansing plants.

has promised to send a representative to present his views on the subject of highway safety as interpreted by the report of the recent conference. Exhibitions and demonstrations of apparatus and equipment will be important features of all sessions.

Duesenberg Makes Revision in Prices

INDIANAPOLIS, May 6—The Duesenberg Motors Co., successor to the Duesenberg Automobile & Motors Co., Inc., has announced a revision in prices of various body models and has added a 5-passenger sedan listing at \$7,700. The price changes represent an increase on the various models of from \$100 to \$500, the 4-passenger coupe being the only one retained at its former price.

The new and old prices are as follows:

	Old Price	New Price
3-p. Roadster	\$6,500	\$6,850
5-p. Phaeton	6,250	6,500
7-p. Phaeton	6,750	6,850
4-p. Sp. Phaeton	6,500	6,850
4-p. Coupe	7,500	7,500
7-p. Sedan	7,800	8,300
5-p. Sedan	7,700

BRAKE LINING MEETING

NEW YORK, May 6—A meeting of the Asbestos Brake Lining Association at which the newly appointed commissioner of the organization, O. B. Towne, will be introduced to the membership, will be held at the Waldorf-Astoria Hotel on May 11. Among the topics to be discussed are the 1925 Data Book, the proposed book of sizes and the code of ethics.

Tire Orders Rushed Before Price Raises

Good Demand Continues After May 1—Makers Commend Firestone's Initiative

AKRON, May 6—Automobile tire manufacturers were swamped with orders from dealers all over the country, just prior to the increase of 5 to 10 per cent in tire prices put into effect May 1 by the Firestone Tire & Rubber Co., and followed closely by other companies. The demand slowed up slightly after this wave of buying, but continues in good volume.

The advance, which includes all grades of tires except balloons, fabrics and 3½-in. cords, is regarded by rubber men here as the forerunner of still higher prices in the not distant future.

Harvey S. Firestone, president of the Firestone Tire & Rubber Co., has earned the commendation of his competitors for his action in initiating the long-awaited price increases. Heretofore he has been bitterly denounced by many in the rubber industry because of his previous attempts to keep tire prices at the lowest possible levels, despite the rising cost of crude rubber and other raw materials.

Fights British Monopoly

Downward price revisions in the past invariably have been led by the Firestone company. Furthermore, Firestone's profits have been higher than some of his competitors, despite the low selling prices of Firestone products. For some time Mr. Firestone has been fighting the Stevenson Rubber Restriction Act, which he blames for making necessary the recent price increases. He is still striving to establish an American-controlled crude rubber supply to break the British monopoly.

Earnings of the tire manufacturers will be considerably augmented by the price increase. Most of the well managed concerns made satisfactory profits in the first quarter of 1925. The margin of profit was reduced, however, during April, because the companies had exhausted nearly all the supply of cheap crude rubber on hand. Rubber had advanced from 30 to 45 cents in the last four or five months, while tire prices remained stationary.

As the higher price schedules will be in effect during the last two months of the current quarter, there is no doubt that the tire manufacturers will show better profits for the first six months of the year than in the first half of 1924.

NEW SPARK PLUG PLANT

MIAMI, May 7—The new plant of the Airkool Spark Plug Co., which is now being constructed on N. W. Twentieth Street, in Miami, at an estimated cost of approximately \$50,000, is expected to be ready for production late in the spring or early this summer.

Men of the Industry and What They Are Doing

Bancroft Directs Stutz Service

F. B. Bancroft has been appointed manager of the service department of the Stutz Motor Car Co. of America, Inc., according to a recent announcement from F. E. Moskovics, president. He succeeds Walter A. Weidely, who has been in the Stutz service department for eight years, and who has now been assigned to special work in the sales department.

For ten years Mr. Bancroft was with the Cadillac Motor Car Co., in service work in one of the largest service stations in the country. Mr. Weidely, who is the son of George Weidely, engineer and inventor, in addition to his work in the Stutz organization, has been interested for some time in the sales end of automotive accessories through the ownership of a local wholesale equipment company.

Faust Joins Oakland

H. H. Faust has been appointed Pontiac district manager for Oakland Motor Car Co., succeeding C. E. Borland, resigned. He comes from the Buick Motor Car Co., for whom he was manager of the Chicago retail branch for the past year. For two years before that he was in the wholesale field for the same company under the Chicago and Milwaukee branches. Previously he had been associated with the Samson Tractor Co. The Pontiac territory includes all of Michigan except a few counties in the northern peninsula, a portion of northwest Ohio and northern Indiana. Headquarters are at the Oakland factory.

Rugg on Vacuum Oil Staff

Harry M. Rugg, formerly in the experimental department dynamometer laboratory of Dodge Brothers, and for the past year engaged in automotive research in the mechanical testing laboratory of the Texas Oil Co., has been made an assistant on the headquarters engineering staff of the automotive department of the Vacuum Oil Co.

Kroh Resigns from Chevrolet

A. R. Kroh has resigned as special representative of the sales promotion department of the Chevrolet Motor Co. to devote his time for the present to personal interests. He has been with Chevrolet for the past year, coming from the Goodyear Tire and Rubber Co., where he was active in sales promotion work in the field for many years.

Sweeney on A. E. A. Board

B. K. Sweeney of the B. K. Sweeney Electrical Co., Denver, has been elected a member of the board of directors of the Automotive Equipment Association to fill the vacancy caused by the resignation of J. L. Jenkins, formerly of the General Asbestos & Rubber Co.

tronic and Manufacturing Co., is now connected with the Detroit office of the Hyatt Roller Bearing Co.

Burrows Heads Mullins Branch

F. J. Burrows will be in charge of the new Detroit office of the Mullins Body Corp., of Salem, Ohio. It is planned to have this branch bring the company more in contact with automobile factories for metal bodies, hoods, fenders and general metal stamping.

McDonough Directs Cab Sales

C. G. McDonough has been appointed sales manager of the H. C. S. Cab Manufacturing Co., succeeding C. C. Mertz, now assistant to H. C. Stutz, president. Mr. McDonough was sales manager of the taxicab division of the Willys-Overland Co. for three years.

Roberts Represents Northway

T. H. Roberts has been appointed eastern district sales manager of the Northway Motors Corp. He was formerly manager of the GMC branch in Boston and was also connected with the Selden truck agency in that city.

"X" Branch Moved

George Bain and Joseph St. Mars will continue in charge of the Canadian branch of the "X" Laboratories, New York and Boston, which was lately moved from Montreal to Toronto.

Pabst with Tool Co.

G. A. Pabst has joined the Giddings & Lewis Machine Tool Co. as special representative in the sale of G & L grinders in the United States and Canada. His headquarters will be in Chicago.

Dugan Recovers from Cold

W. E. Dugan, president and general manager of the Shuler Axle Co., is well on the road to recovery, following a severe cold contracted during a recent business trip to Chicago.

Smith to Leave Trenton Co.

D. W. Smith, president of the Trenton Rubber Mold Co., Trenton, N. J., will shortly dispose of his interest in this concern. The company makes molds for automobile tires.

Coppock with Standard Truck

Orville Coppock has resigned from the Commerce Motor Truck Co. to join the Standard Motor Truck Co. as assistant to F. J. Fisher, general sales manager.

Cousins with Hyatt

E. A. Cousins, formerly Detroit representative of the Westinghouse Elec-

Busby Joins Blood-Brothers

E. B. Busby, Detroit, is now sales representative for Blood-Brothers Machine Co. Universal joints and propeller shafts will be handled.

Dunne Manages N. Y. Branch

J. J. Dunne is in charge of the new New York branch of the Haskelite Manufacturing Corp.

Used Car Director Appointed by Dodge

Schlattacasse Recalled from Memphis to Manage Activities

DETROIT, May 6—A. H. Schlattacasse, district representative in Memphis for Dodge Brothers, Inc., has been transferred to sales headquarters at the factory, where he will be in charge of used car activity. This work, the factory declares, has been an integral part of the general work of the sales department for almost five years under direction of a special assistant sales manager.

Under this department the used car policies of Dodge Brothers have been so developed and administered, the company states, that its dealers have never been affected seriously by difficulties arising from taking cars in trade. The transfer of Mr. Schlattacasse to this work is to provide for its continuance and development in keeping with the well defined used car policies of the company, it is declared.

Operations Have Been Studied

From the first time that trading of cars on new sales developed into volume proportions the Dodge company has formulated standards of procedure that it has insisted its dealers adhere to. The first and fundamental rule has been that these be accepted only at prices permitting of profitable resale through its field organization. Dealer used car operations have been closely studied and kept constantly under factory direction and control. Within the past year the factory has worked out and used an advertising campaign setting forth its policies to prospective used car buyers. Displays and pamphlets were made available to dealers for use in showrooms and for mailing to buyers. This is instanced by the factory to indicate that it has long had a paramount interest in aiding dealers in used car merchandising.

Buick Concentrates Body Work in Flint

Detroit Assembly Plant Closed— Duco Finishing Requires Less Room

DETROIT, May 5—Buick Motor Co. is discontinuing operation of the plant that it has used here for the past two years for assembling closed models and will concentrate all its manufacturing operations at its main Flint factories. The Detroit plant has been assembling about 250 cars daily, all closed models, parts for the assembling operations coming from Flint and the bodies from the Detroit Fisher Body Corp. plants.

President H. H. Bassett, of Buick, in announcing the plans to concentrate operations at Flint, said:

"Due to the ever increasing demand for closed cars and also due to the fact that Duco finish has simplified the painting operation, thereby taking up less room, we find that we have plenty of room at the home plant to produce our requirements there. For that reason we are releasing the Detroit assembly plant to General Motors Corp., which wishes to use the plant in another line of work."

Factory Built by Saxon

The Detroit plant has been known as Buick factory No. 75. It was built originally by the Saxon Motor Car Co., following the war but was never occupied by this company. It came into possession of General Motors Corp. during the regime of W. C. Durant as president, and was used for the manufacture of the Scripps-Booth car until this car was discontinued in 1922. The plant was then turned over to Buick for closed car production because of pressure of manufacturing operations at the main Flint factories and also because of its proximity to the Fisher body plants in this city.

Three of the main factories at Flint are being rearranged to absorb the increased closed body assembly work.

Texas Trucks Effect Railroad Haulings

AUSTIN, TEX., May 4—Although the preliminary valuations of the intangible assets of the railroads of Texas by Edward Edwards, State tax commissioner, place the total close to \$80,000,000, which is an increase of about \$5,000,000 over last year, all of the railroads in Texas are keenly feeling the effects of motor truck and motor bus competition, Mr. Edwards said.

"There may come a time soon," he said, "when there will be little or no intangible values to Texas railroads. This results from the fact that nearly every railroad line in Texas is being paralleled by a highway that is becoming cluttered with high-power trucks transporting field products to market, even to shipside at Galveston. The railroads are

feeling this competition as never before, and it is becoming more acute every day.

"If it keeps up its present pace it will be but five years until every railroad line of consequence in Texas will have the strongest kind of competition by trucks using good paved highways."

FEDERAL ORDERS 4500 ENGINES FROM WILSON

TOLEDO, May 5—An order for 4500 engines has been placed with the Wilson Foundry & Machine Co., Pontiac, Mich., by the Federal Motor Truck Co., for the manufacture of its new Federal Knight truck, it is reported here. The order involves more than \$1,500,000 and is the largest single order written in the history of the plant. Additional employees will be taken on.

In less than a year 3000 of the Federal Knights have been placed in operation.

Complete Organization of E. H. Wilson Company

MOBILE, May 5—Final transfer of the Mineral Rubber Products Co. of Mobile and the General Battery & Supply Co. of East Mobile to the E. H. Wilson Manufacturing Co., which succeeded the former Mobile Body Corp., was completed this week. A. C. Vinton, purchasing agent for the body corporation, has been made general manager of the Battery plant and William E. Swanson, for 15 years president and general manager of the Chicago Coach and Carriage Co., has been appointed factory manager for the body plant in Mobile. J. J. Bretson, formerly of Chicago, is in charge of the rubber products plant in Mobile.

The body factory is now operating at capacity producing auto bodies, hoods, fenders, and other sheet metal parts with a force of 450 men. The rubber plant is making rubber goods, battery containers, supplies and insulators for the auto trade and the battery plant is at capacity producing auto batteries, radio batteries, and farm lighting system units. Officials and executives of the Mobile Body Corp., are retained in the Wilson organization, E. H. Wilson, for 20 years with the body concern, being president and general manager.

MAGAZINE ADS GAIN

NEW YORK, May 6—The total amount spent in national magazine advertising by the automobile industry has increased from \$5,006,845 in 1915 to \$15,744,732 during 1924. In the list of 23 main classes of business covered by the 1925 Crowell survey of national advertising, it ranks second in magazine advertising expenditures, with foods and food beverages first, and drugs and toilet articles third.

METAL MARKETS

Automotive consumption is emphatically the brightest spot on the otherwise drab steel market firmament. Rollers of full finished automobile sheets and strip steel mills are in relatively better position as concerns orders than most of the industry's other branches, the latter operating at about two-thirds of capacity which is a good showing under present conditions. The market for hot-rolled ranges from 2.20c., Pittsburgh base, for the heavy gauges to 2.40c. for the lighter strips while that for cold-rolled is on a 4c. base, with here and there a slight concession in the case of attractive tonages or specifications. The full-finished automobile sheet market may be characterized as steady at 4.40c., Pittsburgh base, which condition does not apply to the sheet market as a whole.

So far there have been no developments to show that the recent declines in sheet prices have exerted pressure on the sheet bar market which remains pegged at \$37. Absence of open market commitments is undoubtedly responsible for this as the sheet bar market, artificially controlled as it may be, can not for any length of time remain utterly out of gear with the sheet market. Either sheets will have to go up or sheet bars will have to come down. The leading interest as well as the larger independents are striving hard to conserve prices. The 2c. steel bar price is applied with much discrimination, and is by no means as general as newspaper reports intimate.

With the exception of a few specialties which await readjustment in conformity with the general scale of steel values, the market presents the appearance of scraping bottom, and further contraction in production or the slightest spurt in the demand is likely to be reflected without much delay in a stronger tone. Steel consumption, the unknown quantity in the market's algebra, is now sensed to be running ahead of production in most lines, and reserve stocks are being cut down slowly but surely. Orders emanating from the automotive industries are on the increase, reflecting greater consumption in that quarter, but buying is still strictly on an "order this month for next month's needs" basis, and, in some instances, the interval between wire orders for steel and actual need of the material is rather a matter of days than of weeks.

Pig Iron—The pig iron market continues in the doldrums with the nominally quoted prices subject to more or less shading according to the eagerness of blast furnaces to keep iron moving from their yards and the apathy of buyers. For all that, the outlook is none too certain from the melter's point of view. No one can tell how the coal situation will shape itself and what its effect on the coke market will be. Some automotive foundries are quietly contracting and availing themselves of the low prices which the market affords.

Aluminum—The world's markets continue closely controlled, but there are signs that Germany's supply is now such that eventually there may be a return of active German competition in the American market. The sole domestic producer continues to figure prominently as importer. The market continues unchanged in price or tone.

Copper—As was to be expected, denial has been made by the leading interest of any support of the reported movement to curtail output artificially in order to lift prices.

Buda Develops New Six Cylinder Engine

Model GL6 Is Identical with BUS in Appearance—New Lubrication System

HARVEY, ILL., May 4—A new six cylinder engine known as model GL6 having a 4½ in. bore and 6 in. stroke has been developed for bus service by the Buda Co. The appearance and construction of the engine is identical with the smaller 4 x 5½ bore and stroke model known as BUS and which was described in detail in the Dec. 4, 1924, issue of AUTOMOTIVE INDUSTRIES.

The bore and stroke of the new engine gives a piston displacement of 572 cu. in. as compared with 386 cu. in. in the smaller model while the rated horsepower is increased to 48.6 from 38.4. A 1¼ in. carburetor replaces the 1½ in. type on the BUS engine. As the new engine is designed for heavier and more continuous service, the diameter of the connecting rod and main crankshaft bearings has been made 3 in. as compared with 2½ in. in the smaller edition. The rear main bearing is 3 11/16 in. long while the other three main and connecting rod bearings are each 2¼ in. long.

Oil Fed to Piston Rings

One departure from the construction used in the smaller engine is a change in the lubrication system. By means of specially forged connecting rods with holes drilled through the center, oil is now fed under pressure to the piston rings. Instead of the conventional web construction in the connecting rod the web has an enlarged section of circular shape through which the oil hole is drilled. Forced feed lubrication from a gear pump delivers oil to the main crankshaft, connecting rod and cam shaft bearings as in the BUS model.

In locating the piston pin a double lock is used. A tapered set screw which goes through a hole in the piston pin itself is located in the boss at one side of the piston. Lock rings in annular grooves at the outer ends of the piston pin bosses are also employed so that if the set screw should become loose it will be impossible for the piston pin to move end-wise and score the cylinder walls.

Durant Installs Two New Direct Branches

NEW YORK, May 5.—With the installation of new wholesale offices in Memphis and Des Moines, Durant Motors, Inc., has completed the installation of its system of dealing with retailers through direct factory branches. The policy was started last July, and the country is now zoned into 21 wholesale districts.

According to an announcement from Colin Campbell, vice-president of the Durant company, H. D. Apgar will be in

charge of the office in Memphis, where he will supervise the distribution of Star and Durant cars in western Tennessee and in the States of Louisiana and Mississippi. He was formerly in charge of the St. Louis wholesale office.

J. F. Beebe, formerly assistant to the sales manager at Kansas City, has been named manager of the branch in Des Moines. This office will supervise the wholesale business in Iowa and Nebraska.

NEW PACKARD MOTOR IN AIRPLANE RECORD

PHILADELPHIA, May 2—Breaking all endurance records for hydro-airplanes by remaining in the air 28½ hours, the twin engined, metal hull PN-9 navy flying boat came to rest in the Delaware River after covering a distance of 2300 miles. A forty mile course was set over the Delaware and 28 round trips made at an altitude of 1000 feet. The previous maximum time in the air was 14 hours and by doubling the non-stop record the PN-9 proved its ability to make the proposed 2000 mile hop from San Diego to Honolulu this July.

Lieuts. J. R. Kyle and C. H. Schil-dauer of the navy were the pilots, and the other two members of the crew included Capt. L. M. Woolson, research engineer of the Packard Motor Car Co., and Charles Sutter, navy mechanic. Powered with two of the new Packard motors the PN-9 maintained an average speed throughout the day and night of 80 m.p.h.; 1300 gallons of gasoline and 150 gallons of oil were carried, making the total weight lifted, including the crew, 19,000 lb. The seaplane was in perfect condition after the flight, and no repairs or adjustments were made while in the air.

General Radiator Buys Quincy Land for Plant

QUINCY, ILL., May 5—The General Radiator Co., Inc., a \$2,000,000 corporation, representing the consolidation and merger of half a dozen concerns in the Chicago district, has acquired a 16-acre tract in Quincy, and will invest more than \$600,000 in the first unit of its manufacturing plant. The products include replacement auto radiators, auto equipment radiators, truck, tractor and aeroplane radiators, auto wheel locks, auto hardware, spotlights, stop lights, luggage carriers and seamed tubing.

The General Radiator Co. is headed by C. W. Gillett with B. F. Sperry, president of the company; Edward O'Brien, vice-president; James Carswell, secretary and Harry R. Hargis, general sales manager.

FINANCIAL NOTES

American Bosch Magneto Corp. for the first quarter of 1925, reports total sales of \$2,950,655 and net earnings after charges but before taxes of \$76,632, equal to 55 cents a share on the capital stock. For the first quarter of 1924 total sales were \$3,095,764, net before taxes \$147,529, and earnings per share \$1.54.

Lee Tire & Rubber Corp. and subsidiaries, for the quarter ended March 31, 1925, show net income of \$5374 after expenses, interest, depreciation, etc., equivalent to 2 cents a share earned on 214,837 outstanding shares of no par capital stock. This compares with net loss of \$112,217 in first quarter of 1924.

Mullins Body Corp., for the quarter ended March 31, 1925, reports net profit of \$104,096 after expenses, interest, etc., equivalent after preferred dividends to 84 cents a share earned on 100,000 shares of no par common stock, against \$69,460 or 50 cents a share in the first quarter of 1924.

Dillon, Read & Co., on the basis of preliminary reports of the results of the sale by the syndicate headed by that company of \$85,000,000 in preference shares of Dodge Bros., Inc., estimate that the total number of stockholders is between 20,000 and 25,000.

Dunlop Tire & Rubber Corp. of America has called for payment June 1, 1925, at 105 and interest, \$110,000 of its 1st and collateral trust 7s, Series "A," due Dec. 1, 1942, at Lee, Higginson & Co., New York; conversion privilege on drawn bonds to expire May 21, 1925.

Wire Wheel Corp. of America as of Dec. 31, 1924, shows current assets of \$978,727 and current liabilities of \$35,136, leaving net working capital of \$943,591, against \$1,050,025 for Dec. 31, 1923.

Gabriel Snubber Manufacturing Co.—The New York Curb Market admitted to trading this company's 198,000 authorized shares Class "A" common stock, no par value, "when, as and if issued."

Goodyear Fabric Co., subsidiary of Goodyear Tire & Rubber Co., has sold, through Dillon, Read & Co., \$1,750,000 of first mortgage ten-year 6 per cent bonds, due April, 1935.

Maxwell Motor Corp.—Revised figures for 1924 show net earnings per share were \$8 on Class "A" stock and \$3.56 on Class "B," against \$8 and \$2.06 respectively, in 1923.

H. H. Franklin Manufacturing Co. has declared the regular quarterly dividend of 1½ per cent on the preferred stock, payable May 1 to holders of record April 30.

STARTS MAKING HOIST

RACINE, WIS., May 4—The Swift Products Co. is a new Racine concern, which has taken extensive space in the former Secor Trunk Co. plant, now an industrial community group, and is starting the manufacture of a new device to replace the present "repair pit" in automobile factories and garages. The hoist raises cars to a height of 4½ ft. and is raised or lowered by power supplied from the car engine through the rear wheels. It may also be operated by hand. Two hoists have been ordered by a Racine factory for loading passenger cars into freight cars on track.

Calendar

SHOWS

May 20-23—Detroit, Second Annual Automotive Maintenance Equipment Show, General Motors Building, conducted by the National Automotive Chamber of Commerce, with cooperation of the Motor and Accessory Manufacturers Association, National Automobile Dealers Association, Society of Automotive Engineers, Automotive Equipment Association, Automotive Electric Association and the Automotive Manufacturers Association, Sam Miles, manager.

Sept. 14-19—Cleveland, Public Auditorium, Annual Convention and Exposition, American Society for Steel Treating, W. H. Elsenman, secretary.

Sept. 21-26—London, England, Annual Cycle and Motorcycle Show under auspices of the British Cycle and Motorcycle Manufacturers and Traders Union, Ltd.

Oct. 8-17—London, Olympia passenger car show.

Oct. 29-Nov. 7—London, annual truck show.

Nov. 26-Dec. 6—Berlin, Germany, Annual Automobile Show in the Kaiserdamm.

CONVENTIONS

May 6-9—Ninth annual meeting of the American Gear

Manufacturers Association at William Penn Hotel, Pittsburgh.

May 11—New York, Waldorf-Astoria, Asbestos Brake Lining Association.

May 14-16—Ann Arbor, Mich., University of Michigan, Taylor Society.

May 15-16—Chicago, Congress Hotel, National Battery Manufacturers' Association.

May 20-22—Washington, Annual Meeting of the United States Chamber of Commerce.

May 20-23—Milwaukee, National Association of Purchasing Agents.

May 20-23—Detroit, General Motors Building, National Automotive Service Convention conducted by the National Automobile Chamber of Commerce with the cooperation of Motor and Accessory Manufacturers Association, National Automobile Dealers Association, Society of Automotive Engineers, Automotive Equipment Association, Automotive Electric Association and Automotive Manufacturers Association.

May 27-28—Regional Motor Transport Conference under auspices of National Automobile Chamber of Commerce in Chicago. "Coordinated Transportation" will be the theme of the conference.

May 28-30—Schenectady, Hotel Van Curler, Spring Sectional Meeting, American Society for Steel Treating.

June 1-3—Detroit, American Body Builders Association at Hotel Statler.

June 22-27—Summer convention of the Automotive Equipment Association at the Broadmoor Hotel, Colorado Springs, Colo.

Sept. 14-19—Cleveland, Public Auditorium, Annual Convention and Exposition, American Society for Steel Treating.

RACES

May 11—Charlotte, N. C.

May 30—Indianapolis.

June 13—Altoona, Pa.

June 20—Baltimore, Washington Speedway, Laurel, Md.

July 26—Paris, Montlhery Track, French Grand Prix.

Sept. 7—Altoona, Pa.

Sept. 30—Fresno, Cal.

Oct. 10—Baltimore-Washington Speedway, Laurel, Md.

Oct. 24—Charlotte, N. C.

Nov. 26—Los Angeles.

S. A. E. MEETINGS

National

June 15-19—Summer meeting of the Society of Automotive Engineers at White Sulphur Springs, W. Va.

Sept. 15-16—Production meeting and exhibition.

Sept.—Automotive Transportation meeting.

Nov.—Service Engineering meeting.

Sectional

May 12—Pennsylvania Section, Design and Operation of Lighter than Air Craft, Lt. Com. S. M. Krauss. Trip to Naval Air Station, Lakehurst, N. J.

May 19—Buffalo Section, Possibilities of Hydraulic Steering Control, J. W. White.

May 21—Detroit Section, Development of Automotive Clutches, E. E. Wemp, Metropolitan Section. Paper by H. M. Crane and J. H. Hunt.

May 22—Los Angeles Group. Paper by H. L. Horning.

May 28—San Francisco Group. Rectification versus Filtration of Oil in the Crankcase of an Automobile While in Operation, Herbert L. Dickey.

May 29—Indiana Section, Aircraft for Defense, Major General M. M. Patrick, Influence of the Motor Car on the Characteristics of the American People. Hon. A. J. Beveridge. Address by Charles M. Schwab, The Engineer, What He Has Done for Humanity, C. F. Kettering.

Executives to Talk at Taylor Meeting

DETROIT, May 6—H. M. Jewett, president, Paige-Detroit Motor Car Co.; T. J. Little, Jr., Lincoln Division, Ford Motor Co.; J. H. Marks, Packard Motor Car Co.; J. H. Collins, Chilton Class Journal Co.; and L. J. Purdy, Oakland Motor Car Co., will discuss various phases of automotive development as related management at the meeting of the Taylor Society to be held at Ann Arbor on May 14, 15, 16. A large part of the meeting will be automotive in character, the topics including discussion of frequency with which new models should be brought out, whether or not automobile manufacturers should make their own accessories, production control in automotive manufacture, and tendencies affecting methods of management in the automobile industry.

A large number of automotive men are expected at the meeting, since all executives, whether members of the society or not, are being urged to attend.

DEERE ON \$5 BASIS

MOLINE, May 5—Deere & Co., agricultural implement manufacturers, placed its preferred stock on a \$5 annual basis at the recent annual meeting, the directors declaring a quarterly dividend of 1¼ per cent. Heretofore the annual rate has been \$4, a rise a few months ago from \$3. Officers were reelected with William Butterworth, president; Charles

MEXICAN PLANT SITES CONSIDERED BY FORD

MONTEREY, MEXICO, May 1—Representatives of the Ford Motor Co. are in Mexico investigating the situation with the view of locating an assembly plant. Although Monterey, San Luis Potosi and Mexico City have been visited by them and conditions inquired into, the capital is most favored as a site for the proposed plant, it is stated. At Tampico the assembling of Ford automobiles has been carried on on a small scale for some time, the output of the plant there being about fifteen cars a week.

The good roads movement in Mexico is being watched with interest by the Ford Motor Co. The fact that the contract has already been awarded for the construction of two trunk highways to lead from Rio Grande border points to Mexico City is taken as an indication that the Federal Government will accomplish much in this line of development during the next few years.

C. Weber, George W. Mixter, Burton F. Peek, Floyd R. Todd, Frank Silloway and Charles Deere Wiman, vice-presidents; George W. Crampton, treasurer; T. F. Wharton, secretary and comptroller.

Major Schroeder to Head Ford Airport

CHICAGO, May 5—Major R. W. Schroeder, supervisor of the aeronautical research of the Underwriters Laboratories located in this city, has been retained as supervisor of the Ford Airport at Dearborn, Mich. He has resigned his present position to take effect within the next few weeks. He will be in charge of all flying operations for the Stout Metal Airplane Co., including the service between the Ford factories. Another pilot to operate a second plane has been engaged.

Major Schroeder was stationed during part of his army service at Wright Field, Dayton, Ohio. While trying for an altitude record there he fell approximately three miles, righting his plane when approximately 200 feet from the ground.

BADGER ACQUIRES PLANT

MILWAUKEE, WIS., May 4—The Badger Manufacturing Corp., an extensive producer of bumpers and other automotive equipment specialties, has taken a 15-year lease on the machine shop of the Avery company's gas engine plant at Fifty-seventh Avenue and Mitchell Street, in West Allis, Milwaukee. The plant, originally built by the Frank M. Davis Co., was acquired by the Avery Co. of Peoria, Ill., at the outbreak of the war as the engine production center. The property consists of eight acres of land, foundry, machine shops and several other buildings.